

1990 CENSUS OVERSIGHT

HEARING

BEFORE THE

SUBCOMMITTEE ON GOVERNMENT
INFORMATION AND REGULATION

OF THE

COMMITTEE ON
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

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MAY 5, 1989

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1990 CENSUS OVERSIGHT

FRIDAY, MAY 5, 1989

U.S. SENATE,
SUBCOMMITTEE ON GOVERNMENT
INFORMATION AND REGULATION,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10:07 a.m., in room SD-342, Dirksen Senate Office Building, Hon. Jeff Bingaman (Chairman of the Subcommittee) presiding.

Present: Senators Glenn, Bingaman, and Levin.

Staff Present: Steven Katz, Chief Counsel; Edwin S. Jayne, Staff Director; Kenan P. Jarboe, Professional Staff Member, and Ann Schnittker, Secretary.

OPENING STATEMENT OF SENATOR BINGAMAN

Senator BINGAMAN. The Subcommittee will come to order.

This is the first hearing of the newly created Government Information and Regulation Subcommittee. This Subcommittee consolidates the Senate Governmental Affairs Committee's jurisdiction over information policy. The jurisdiction had previously been spread among several subcommittees.

I want to commend Senator Glenn, our Chairman, for his foresight in establishing the Subcommittee.

We are living in an economy and in a society that has gone through major changes in the past two or three decades. Ours has been called the "age of information." In this information age, the laws and activities governing Federal information policy have become increasingly important to the effective and efficient operation of Government and its impact on the public.

There is also the question of how best to utilize the information that the Government does collect. There is a lot of information within the Government, but there seems to be significant difficulty in getting at it.

For public policy purposes, information is the infrastructure for good decisionmaking and needs to be readily available. Information is also a valuable resource that we need to mobilize if we are to become and remain competitive in the new global economy. I believe that there is great potential for improved use of Government information in a variety of areas, such as export promotion, technology transfer, scientific research and development, education, health and other areas.

Within the Federal information system, the Census Bureau stands out as the "granddaddy" of all Government statistical agen-

cies, and today's hearing is an overview of the Census Bureau's largest task—the management of the 1990 Census.

Nineteen-ninety marks the bicentennial anniversary of census-taking in the United States. The census is the only information-collection activity mandated by the Constitution specifically for the purposes of determining how many seats each State gets in the House of Representatives.

Using a method that Congress has chosen, the Census Bureau calculates the apportionment based on the results of the census. Later today, we will be hearing from Professor Peyton Young, a nationally-known expert on apportionment, about the problems and uncertainties inherent in that process.

Census data is also used by the States for the purpose of determining the boundaries of Congressional and legislative districts for the issue of redistricting.

Next to apportionment, the most important use of Census Bureau data is in population formulae used for the distribution of Federal funds. Approximately \$35 billion of Federal funds are tied to Census Bureau data, along with another \$50 billion in State and local funds. Census data also has widespread uses in a variety of programs besides the allocation of Federal funds.

The private sector, of course, relies very heavily on Census Bureau data for market research and other activities. I understand that one of our witnesses later today, Mr. Edward Spar, will discuss the private sector uses of Census Bureau data in greater detail. The data is also extremely valuable for academic research.

The accuracy and quality of the census data is of the highest importance. We hope to hear today about the steps that the Census Bureau is taking to ensure the highest possible accuracy, and we also hope to touch upon the issue of possible undercount and any resulting adjustment that might be needed—an issue which is presently in the courts. We also hope to raise the issue of the quality, uses and accessibility of the data.

The decennial census is one of the largest single undertakings of the Federal Government. The management of such an undertaking raises a number of important issues which we hope to cover in this hearing.

Since this is the first appearance by the Census Bureau before this Subcommittee, I hope it is the beginning of a close working relationship between the Subcommittee and the Bureau. I hope the Bureau will work closely with members and staff of the Subcommittee and with the staff of the Congressional support agencies today and in the future.

I will make one final observation before calling on Senator Glenn for his opening comments. As of today, the President has not yet announced his nominee for Census Director. Given the importance and the sensitivity of the task facing the Bureau in carrying out the 1990 Census, I believe this is a critical appointment. We have heard various rumors about possible nominees, and because the Bureau faces key decisions about the operation of the census, I urge the President to move forward quickly with a nominee. I also urge the President to carefully consider the nominee. It is extremely important that the Bureau maintain a credible and impartial position as the Nation's premier statistical agency.

I hope the President will nominate an individual with the professional credentials and the impartial, non-ideological respectability that is needed to lead the Bureau in this critical time.

[Prepared statement of Senator Bingaman follows:]

PREPARED STATEMENT OF SENATOR BINGAMAN

I would like to welcome you here to the first hearing of the newly-created Government Information and Regulation subcommittee. This subcommittee consolidates the Senate Governmental Affairs Committee's jurisdiction over information policy. This jurisdiction had previously been spread among the Committee's various subcommittees. I would like to commend the committee chairman, Senator Glenn, for his foresight and efforts in establishing this subcommittee.

We are living in an economy and a society that has gone through major changes in the past two or three decades. Ours has been called the "age of information." In this information age, the laws and activities governing Federal information policy have become increasingly important to the effective and efficient operations of the government and its impact on the American public. (Many are concerned with the need for an improved information policy, including better guidance governing collection, analysis, and dissemination of such information, as well as the management and procurement of information systems. For example, there is a concern that our information collection systems seem to be based on collecting economic and social data useful in the past, not for today.)

There is also the question as to how best to utilize the information that the Federal government does collect. There is a lot of information within the government, but there seems to be great difficulty in getting at it. For public policy purposes, information is the infrastructure for good decision making. It needs to be easily available. Information is also a valuable resource we need to mobilize if we are to be competitive in the new global economy. I believe there is great potential for improved use of government information in a variety of areas, such as export promotion, technology transfer, and scientific research and development.

Throughout this Congress, the subcommittee intends to be closely involved with these and other important information issues.

Within the Federal information system, the Census Bureau stands out as the "granddaddy" of all government statistical agencies. Today's hearing is an overview of the Census Bureau's largest task—the management of the 1990 census.

1990 marks the bicentennial anniversary of census taking in the United States. The census is the only information collection activity mandated by the Constitution, specifically for the purposes of determining how many seats each state gets in the House of Representatives. Article 1, Section 2 of the Constitution states that:

"Representatives . . . shall be apportioned among the several States . . . according to their respective Numbers . . . The actual Enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent Term of Ten years, in such manner as (Congress) shall by Law direct."

Title 13, United States Code, assigns the responsibility to conduct the census to the Secretary of Commerce, who delegates this task to the Census Bureau. Using a method that Congress has chosen, the Census Bureau calculates the apportionment based on the results of the census. Later today we will be hearing from Professor Peyton Young, a nationally known expert on apportionment, on the problems and uncertainties of that process.

Census data is also used by the states for the purpose of determining the boundaries of the Congressional and legislative districts—the process known as redistricting. Public Law 94-171 sets up a voluntary program between the Census Bureau and states that wished to receive data for the election precincts and other geographic areas.

Today, states almost always use the most recent federal census counts as the definitive data for redistricting. The Census Bureau must deliver apportionment counts to the President by December 31, 1990 and provide data necessary for redistricting to the states no later than April 1, 1991.

Next to apportionment, the most important use of Census Bureau data is in population formulae used for the distribution of Federal funds. Approximately \$35 billion of Federal funds are tied to Census Bureau data along with another \$50 billion of state and local funds. Unlike apportionment, some funding formulae are tied to ongoing Census Bureau population surveys as well as the decennial census.

Census data also has widespread uses in a variety of programs besides the allocation of Federal funds. Federal, state and local governments utilized census data to develop program goals and policies, and to assess the social and economic progress of certain population groups. The decennial census also provides the statistical basis for many other government information collection activities.

The private sector, of course, also relies very heavily on Census Bureau data for market research and other activities. I understand one of our witnesses later today, Mr. Edward Spar, will discuss the private sector use of the census data in greater detail. The data is also extremely valuable for academic research.

Thus, the accuracy and quality of the census data is of the highest importance. We hope to hear today about the steps the Bureau is taking to ensure the highest possible accuracy. We also hope to touch upon the issue of a possible undercount and any resulting adjustment—an issue which is presently in the courts. We also hope to raise the issue of the quality, uses, and accessibility of the data.

The decennial census is one of the largest single undertakings of the Federal government. The management of such an undertaking raises a number of important issues, which we hope to cover in this hearing. Specifically, we hope to look at the operational problems confronting the Bureau, including the question of cost containment, recruitment of workers, and the use of automation. We also hope to look somewhat beyond the 1990 census to future questions related to follow-up surveys and research and development of new technologies. I understand that one of our later witnesses, Mr. Michael Stoto, will discuss some of the issues concerning the census research and evaluation program.

The experience of the Federal government in planning for the 1990 census also raises important issues of information policy generally. For example, the Census Bureau is facing important questions regarding dissemination of data in the new technological format of CD-ROM and the development of data retrieval software, similar to issues facing other Federal agencies. Examining the role of OMB's Office of Information and Regulatory Affairs, known as OIRA, in the planning process for the 1990 census may also shed some light on OIRA's role generally in the setting of information policy and coordination of statistical issues across the Federal government.

As this is the first appearance by the Census Bureau before this subcommittee, I hope this is the beginning of a close working cooperation between the subcommittee and the Bureau. I hope the Bureau will work closely with the Members and staff of the subcommittee and with the staff of the Congressional support agencies today and in the future.

I would like to make one final observation. As of today, the President has not yet announced his nominee for Census Director. Given the importance and sensitivity of the task facing the Bureau as it carries out the 1990 census, this is a critical appointment. We have heard various rumors about possible nominees. Because the Bureau faces key decisions about the operation of the census, I urge the President to move forward with a nominee. I would also urge the President to carefully consider his nominee. It is extremely important that the Bureau maintain a credible and impartial position as the nation's premier statistical agency. I hope the President will nominate an individual with the professional credentials and the impartial, non-ideological respectability to lead the Bureau through this crucial time.

Senator BINGAMAN. I am very pleased that the Chairman of our Full Committee, Senator Glenn, is able to be with us for a few moments today, and I again commend him for his insight in setting up a Subcommittee with jurisdiction over Government information policy.

I call on him for any statements he would like to make before the witnesses start.

OPENING STATEMENT OF CHAIRMAN GLENN

Chairman GLENN. Thank you very much, Mr. Chairman.

I appreciate that, and I want to commend you for holding this oversight hearing on the 1990 Census. Going back some years—and I hate to start indicating how long I have been around this place—but I was the Chairman of the Subcommittee that dealt with the census last time around. I took it on and thought we were going to

have a 1-day hearing, and that would take care of the census. Well, I got involved with that thing, and I don't know how many hearings we had back then, trying to do our oversight responsibilities, but it was quite a number, as I recall. We got into all the undercount, overcount, all the different problems, how you count people, and how you keep people who should be counted from running when a Federal census-taker shows up with a clipboard.

There are a whole host of things you get into on this topic that are very, very difficult to manage.

As Senator Bingaman mentioned, this is the first hearing of the Subcommittee on Government Information and Regulation. It is a Subcommittee that, under Senator Bingaman's leadership, I know is going to be a very important Subcommittee. It is a new Subcommittee, it has a new Chairman, it has new responsibilities, but also new expectations because, as he said, in the information age in which we live, it is extremely important that the information be accurate.

This replaces our previous Subcommittee on Federal Spending, Budget, and Accounting that we had in the 100th Congress. We felt we needed improved oversight over these areas of information policy. There is a great potential that flows across what we do in the way of exports, technology transfer, scientific research and development, and a whole host of things that Senator Bingaman has looked into on an individual basis, quite apart from this Committee, in the years that he has been on the full Committee on Governmental Affairs. He has become an expert in these areas. He just came back from Japan a few weeks ago, from an extensive trip looking into some of these matters.

Government regulations are a major means by which we attempt to deal with the Nation's problems. The majority of regulations are dependent upon information requirements and application of information technology.

The Subcommittee jurisdiction extends to such things as the Paperwork Reduction Act of 1980 and the amendments made to that Act in 1986; the Sunshine Act of 1975; the Computer Security Act of 1987; Brooks Act policy responsibility; the Privacy Act. All of these deal with different bits of the information picture and how we deal with it.

It also includes the National Archives, our history in this country; the Office of Information and Regulatory Affairs, OIRA, within the Executive Office of the President; and of course, the subject we are dealing with today, the Bureau of the Census.

The Constitution mandates a decennial census in order to apportion representatives among the States—that was its prime function, but there are more basic processes that underpin our system of Government that the census also contributes to.

I wonder whether in our rapidly developing information age we should go to less than a 10-year census. I do not know how often it would be, whether we would do it on a 5-year basis—but I know that business must keep more current than a 10-year census. Whole industries go up and down in 3 or 4 or 5 years. And if we are to provide the best information possible to business, then we must make certain that we are providing that information more rapidly than on a 10-year basis.

I know you deal with that; you have ongoing studies out of the Census Bureau and in the Department of Commerce that attempt to keep up with that. But what Government funds are apportioned—I think \$35 billion or so, annually—is apportioned largely on the basis of what is found out in the census. Whole waves of people come across our borders in some of these areas that are affected. And we measure that once every 10 years; I think we need something more often than that.

We do live in an information age with exploding technology. Your new TIGER mapping system is an example of a new technology barely even dreamed of 10 years ago. Much of the potential to make the operations of Government work better and deliver more services at less cost depends on how we apply new information technologies; it is an important interest within the jurisdiction of this Subcommittee.

I just want to express my appreciation to Senator Bingaman for his willingness to become Chairman of this Subcommittee. It is a big job. It will be one of our most important Subcommittees on Governmental Affairs because it deals with the very fundamentals of how we operate a service economy. A service economy is basically an information economy. We are moving more in that direction, not less. So the work that he is going to be able to do on this Subcommittee is going to be extremely important, and I don't think we could have a better person to chair it.

So we look forward to working on this, Jeff.

Senator BINGAMAN. Thank you very much, Senator Glenn, and I appreciate your being here this morning for our first hearing.

Let me enter something in the record before we go to our witnesses. I would like to insert the testimony of G. Mario Moreno, who is the Associate Counsel for the Mexican American Legal Defense and Education Fund.¹

I will just indicate to anybody who is listening that we will be happy to insert into the record other testimony of people who we have not been able to schedule to testify. If they will deliver that to us in the near future, say, within the next week, we will be glad to include that in its entirety in the Subcommittee record.

I would like to place a statement in the record at this time from Senator Heinz who was unable to be with us today.

[The prepared statement of Senator Heinz follows:]

OPENING STATEMENT OF SENATOR HEINZ

I want to thank my colleague from New Mexico, Senator Bingaman, for providing us this opportunity to examine the processes and politics surrounding the 1990 census.

Mr. Chairman, of particular concern to me is the fact that the upcoming census will completely ignore—in effect, discount—thousands of Americans serving their nation overseas. This injustice has significant implications for several states—including my home State of Pennsylvania. At the heart of the issue is the fact that the findings of the decennial tabulation of the Nation's population may trigger a major redrawing of the country's political map.

It is my belief, Mr. Chairman, that the census should be a completely accurate reflection of America's citizenry. The methodology used should ensure that all U.S. citizens be counted. It almost defies belief that a large block of our Nation's population—our service men and women on temporary assignment overseas—will not be

¹ See p. 177.

counted. By excluding them from the tally, these people literally lose their voice in Congress.

A number of States will be affected adversely by this count. States such as Alabama, Michigan, Missouri, and North Carolina could suffer a direct loss of representation. Connecticut, as well as my home State of Pennsylvania, will definitely be affected if the policy does not change.

Other States, notably California and Texas, stand to gain seats. I have no quarrel with such a shift if it reflects a true change in population. I do take issue, however, with denying citizens their representation simply because the census doesn't want to take the time to count overseas personnel and their families. Pennsylvania, for example, has 23,000 military personnel serving their country overseas. While they put themselves on the front line abroad, we reward them by taking away their basic right of representation at home.

Mr. Chairman, my legislation, S. 290, restores our overseas personnel to the ranks of the represented—where they belong. It is the same effort I took up here in the Senate last Congress and one which was initiated by Congressman Tom Ridge in the House. By including overseas military personnel in the census, this bill takes the necessary steps toward ensuring an equitable census.

Thank you, Mr. Chairman.

Senator BINGAMAN. Now, let's go to our first witnesses.

We welcome Mr. C. Louis Kincannon, who is the Deputy Director of the Bureau of the Census, and Mr. Gene L. Dodaro, who is the Director of General Management Issues in the General Government Division of the General Accounting Office.

We are very pleased to have both of you. I know that you folks have followed these issues and testified on them on the House side, and we are very pleased to have you here.

Mr. Kincannon, why don't you go ahead and give your testimony, and then we'll hear the testimony from the GAO and then have some questions.

TESTIMONY OF C. LOUIS KINCANNON, DEPUTY DIRECTOR, BUREAU OF THE CENSUS, U.S. DEPARTMENT OF COMMERCE, ACCOMPANIED BY SUSAN MISKURA, CHIEF, DECENNIAL PLANNING DIVISION, BUREAU OF THE CENSUS

Mr. KINCANNON. Thank you, Mr. Chairman.

I do have prepared testimony, and with your permission, I would submit it for the record.¹

Senator BINGAMAN. We will include it in the record.

Mr. KINCANNON. I will read a briefer summary statement which will cover the essential points of the prepared testimony.

I am pleased to report to both the chairmen today on the status of plans for the 1990 Census and on the specific issues raised in the letter of invitation.

You both noted very charitably and properly, the long history of the Census Bureau, the establishment of a requirement for a census in the Federal Constitution.

Senator Glenn, you raised many other very interesting questions about the future of the country in terms of handling information and about how the Census Bureau can approach, perhaps imaginatively and on a very cost-effective basis, ways of providing additional information in the intercensal period. We are focusing a good deal of attention on that, and I hope that at a future hearing, we will have time to report on those considerations and engage in a dialogue with the Committee on those matters.

¹ See p. 45.

Senator Bingaman, I was especially pleased, too, that you noted the many other ways in which the decennial census is a part of the fabric of our national character, not just at the point of apportioning seats to the States in the House of Representatives and redistricting, but the many, many uses directly by State and local government and by private business. It affects a great deal the way in which services are offered by the private sector to all our people and where jobs are provided to our people.

The census is a massive and complex undertaking that will involve the enumeration and collection of characteristics for about 250 million people and 106 million housing units in the United States and an additional 3.6 million people and 1.2 million housing units in Puerto Rico and the outlying areas.

Our goal is to count every resident, regardless of where they live. We have devised procedures to cover a variety of living arrangements as well as to assure good census coverage in different parts of the country.

The census is one of the most important activities of the Federal Government. Political representation and money are allocated on the basis of census results, and they are used for planning at every level of Government.

By law, we must submit population counts for apportionment purposes to the President by December 31st of 1990 and counts for use in drawing legislative district lines to the States by April 1 of 1991.

Because the census is so important in terms of allocating political representation and money, there is great concern both inside and outside the Census Bureau about the accuracy of census data. We have taken a number of steps to improve the efficiency and accuracy of the 1990 Census. We are concentrating our energy, attention and resources on these efforts to make the census better. We expect these steps to produce a very complete count.

The improvements we plan to implement for the 1990 Census fall into eight categories. These are discussed in some detail in my written testimony, and I will just touch on them very briefly now.

First, planning. We began major testing earlier for 1990 than for 1980, and we have conducted more major tests than for previous censuses.

Second, promotion and outreach. For the first time in any census, we will have promotional campaigns specifically targeted to blacks, Hispanics, Asians and Pacific Islanders, American Indians and Alaska natives, and to Puerto Rico, in addition to the general audience campaign.

Third, we are working closely with local officials to encourage their support in the 1990 Census. The census is more than just a Federal activity; it is a national ceremony whose success depends on all of us pulling together.

Fourth, we have built into the census process several new ways to increase the mail return rate, including reminder postcards, motivational inserts in the questionnaire mailing packages, a multilingual motivational flyer that will precede the census questionnaire, and expanded questionnaire assistance.

Since the census is taken primarily by mail, a high mail return rate is important if we are to complete operations on time and within budget.

Fifth, we are introducing new procedures to increase the likelihood that a household receives its census questionnaire. This includes direct delivery of questionnaires by census enumerators in some areas where we have experienced problems with questionnaire delivery in past censuses.

Sixth, we are strengthening enumerator training, pay and management. Enumerator training will be more interesting and relevant to the job. Supplemental pay will be given to enumerators who are productive, do good work, and complete their assignments on schedule. And we have planned more frequent contact between supervisors and enumerators to reinforce them in their activities.

Seventh, we have planned several important automation advances that will move the census out of the pencil and paper world and into the computer era. In 1987, we undertook and completed the largest computer procurement in our history. In all, we will have over 500 minicomputers in our temporary offices. Increased automation will help us better control the whole census process, give us more timely and accurate status information, and allow more time for review and correction of any problems that may occur.

Eighth, one of our most far-reaching activities has been the development and implementation of an automatic geographic support system called the TIGER system, that Chairman Glenn alluded to. This system provides better maps produced by computer and consistent geographic information and multiple files.

All in all, we believe we have learned a good deal about the problems and experiences of previous censuses and have designed a census program for 1990 that will resolve many of those problems and produce a very good count of our population.

Now I will turn to the quality of the census data. While we are including new programs in the census process to improve the accuracy of census counts, we are also concerned about assuring high quality for census data in general. Many factors can affect the quality of census data. These include the public's ability to understand the census questions and to fill the questionnaire properly; the ability of enumerators to follow instructions and carry out operations as planned; the processing of questionnaires in preparation for tabulating the data; and the review of census counts by local officials.

I will just mention what we are doing in one of these areas--making it easier for the public to complete the questionnaire. For the first time, we plan to provide toll-free telephone assistance in Spanish and six Asian languages as well as in English for persons who need help in filling out their questionnaire. This will be in addition to walk-in assistance centers, bilingual enumerators, and translations of the questionnaire into over 30 languages.

My third topic is the critical area of budget, recruitment and automation. We estimate that the 1990 Census will cost about \$2.6 billion. I wish we still were talking in terms of \$1.5 billion, Senator Glenn, but it is closer to \$2.6 billion now. We believe that this total will be sufficient to take a good census. We are requesting about

half this total for fiscal year 1990, when we will mail out or deliver questionnaires and conduct personal visits, complete the enumeration, and begin the processing and tabulation of census data.

Factors outside our control, such as a lower than planned mail return rate, or lower than expected productivity, could increase the cost, but based on our experience in the tests, we do not expect that to happen. If one of these events occurs, we will have to make decisions rather quickly based on the precise nature, magnitude and timing of the problem and other factors at the time. Our decisionmaking process will be guided by the principle of preserving census timing, quality and accuracy.

We will need to hire 480,000 persons during the period from October 1989 to September 1990, with about 315,000 persons actually working at the peak of operations in the April through June 1990 period. Hiring this army of workers will be quite a challenge, as it has been in recent censuses.

Over the last 4 years, all through our testing cycle, we have been addressing this vital issue of how to recruit, pay, train and manage our workers. We have implemented innovations in our tests and are confident that these will help us recruit and retain good workers as well as make the census better.

Through the 1988 prelist, which is an address list compilation operation, we learned that our base pay rates of \$5.50 to \$6.00 an hour were not competitive in some areas of the country. Toward the end of the prelist, we found that we had to increase our pay rates in selected areas where we were having difficulty in hiring. At the time we instituted the pay increase, we developed a test to evaluate the effectiveness of the pay increase relative to the original pay rates. We analyzed its effects on productivity and have developed a scheme for setting several different rates for district offices, based on a range of factors including unemployment rates, demographic and economic variables and so on. We think we have a sound plan for setting differential pay rates that will produce good results and still be economical.

I mentioned earlier some of the automation advances we are planning for the 1990 Census. As we reported to the Subcommittee on June 17th of 1988, there were delays in completing our minicomputer procurement in 1987, but we have been able to get back on schedule, I am glad to report.

After delivery of the first minicomputers, we undertook accelerated development of software programs and established a special unit to install and test the hardware. This was done successfully. We were thus in a favorable position for timely development of reliable 1990 systems. All software is being tested before the 1990 Census.

Thus far, we have been very pleased with the performance of all the hardware and the applications software written or converted for use on the equipment. There have been no significant difficulties that have prevented us from completing any activities.

Finally, I will briefly review the progress of major preparatory activities. One of the major preparatory activities for the 1990 Census is the compilation of an address list that we will use to control the delivery and return of questionnaires in 1990. We plan to enumerate about 94 percent of the population with mailback proce-

dures. With these procedures, we have compiled an address list in advance of the census; we will mail or deliver a questionnaire to each address and follow up on those addresses for which questionnaires are not returned by mail. This way, we can complete most of the census by mail and concentrate our resources on follow-up of non-response cases.

The success of these procedures depends in large part on the compilation of an accurate address list before census day. Address list operations began last year and are proceeding on schedule this year. In all, we expect to have about 100 million residential addresses on our list by census day.

Questionnaire printing is one of the most important activities for the census, as of course we cannot conduct the census without questionnaires. The Government Printing Office has awarded several major contracts for producing questionnaires and forms, and these are already being delivered to us under some of these contracts.

In all, we will require some 6 million square feet of space for temporary offices to manage the 1990 Census. These will include 13 regional census centers, which in turn will manage 493 district offices, including the nine in Puerto Rico. In addition, we will have seven processing offices throughout the country. The regional census centers and district offices are responsible for collecting the data. The processing offices prepare the census questionnaires and convert them to computer-readable form so that we can process the data and produce the products.

All of the regional census centers, four of the seven processing offices, and about one-fifth of the district offices are open now, and we expect the other offices to open on schedule later this year.

Mr. Chairman, in closing, let me summarize where we stand as we approach the 1990 Census. We have incorporated improvements in every aspect of census-taking. We believe these advances will lead to an improved count and improved data quality overall for the census. We believe we have requested sufficient funding for a good census, including implementing those improvements. And I must add that we think it is quite important that the Congress approve the budget requested by the President. It is unusual in that it was one proposed by one President, endorsed by another President and, in fact, shielded from the flexible freeze. So we hope that the Congress accords similar priority to that request.

We have made major advances in the area of automation, making the 1990 Census the most automated ever. We conducted a very successful dress rehearsal census in three sites in 1988, and we have successfully completed some major preparatory activities and expect others to be concluded as planned.

We have only to look back to where we were, as Senator Glenn mentioned, 10 years ago, to realize the magnitude of the improvements we have made. In 1979, there were serious delays in map production that in turn caused delays in our address list operations and cancellation of a major operation to update the addresses. There were also delays in production and quality of the census questionnaires.

We learned from these problems, started planning earlier, and made corrections and improvements as necessary. We are doing a

lot of things better for 1990, and we believe we are on schedule and on the path to a very successful census.

Mr. Chairman, that concludes my testimony.

Thank you.

Senator BINGAMAN. Thank you very much.

I would like to call on Mr. Dodaro.

Why don't you go right ahead and summarize your testimony, if you would, and then we'll have some questions.

TESTIMONY OF GENE L. DODARO, DIRECTOR, GENERAL MANAGEMENT ISSUES, GENERAL GOVERNMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY JACK KAUFMAN AND CHRISTOPHER MIHM, EVALUATORS

Mr. DODARO. Mr. Chairman, Senator Glenn, we are pleased to be here today to discuss our observations on the status of plans for the 1990 Census.

With me on my far left is Mr. Jack Kaufman, who has headed our work at the Census Bureau for some time, and on my immediate left is Christopher Mihm, who is a key member of our team monitoring the Census Bureau activities.

With your permission, I would like to have our prepared statement entered into the record,¹ and I will briefly highlight our observations.

Senator BINGAMAN. Yes, we'll include it in the record in full.

Mr. DODARO. In summary, we believe the Bureau has made a number of positive strides in preparing for 1990. For example, the dress rehearsal showed that the Bureau had made some major improvements in automating the production of maps and checking of questionnaires. As Mr. Kincannon mentioned, these efforts replaced some slow and error-prone manual operations that were used in the 1980 Census.

However, as the Bureau continues to prepare for 1990, there are two areas in particular that we believe require greater attention—escalating and controlling costs, and recruiting and retaining over 400,000 temporary employees.

In addition, the Bureau needs to intensify its efforts to plan for the 2000 Decennial. The combination of skyrocketing costs and mounting staffing difficulties call for a fundamental rethinking of the current census approach.

I would like to briefly elaborate on each of these areas.

First, the cost issue. The Bureau historically has had difficulty controlling costs without compromising data quality. It ran out of funds during the 1980 Decennial and needed a \$50 million supplemental appropriation. Operations also were scaled back in certain areas, which affected data quality and slowed the dissemination of certain publications.

Cost estimates for 1990 are following a similar pattern. The Bureau estimated in 1985 that the census would cost \$1.8 billion; however, in 1986, the estimate rose to \$2.6 billion, a 44 percent increase.

¹ See p. 131.

We believe that even this estimate is not complete. The Bureau has not fully incorporated prospective cost increases, such as geographic pay rates and inflation. If the census is completed as planned, we believe the cost could be \$3 billion.

The Bureau's approach to identify cost reductions to date has not addressed the magnitude of the potential shortfall. Reductions totalling at least \$40 million have been made, and these should help, but the Bureau still needs to make more decisions on program priorities. Early decisions are needed to avoid cutbacks more drastic than occurred in 1980 and to minimize the need for a last minute supplemental appropriation.

Let me now turn to the very important area of recruiting and retaining of a quality work force. This area traditionally has been a serious problem for the Bureau. During the 1980 Decennial, about 30 percent of enumerator positions were unfilled during peak operations and turnover rates in many offices were high. The Bureau anticipates even more difficult problems for 1990. It will need to recruit over 1.6 million applicants for positions in district offices. This is about 45 percent more than in 1980.

Two major staffing challenges must be addressed. These include providing competitive pay and expanding the supply of applicants. Early census operations for 1990 demonstrate that the Bureau's planned pay rates may not be adequate to attract and retain needed staff. Inadequate pay contributed to staffing problems during the prelist operations. Twenty-eight percent of areas reported recruitment problems. In addition, turnover was over 60 percent or more than twice what the Bureau had anticipated.

To complete the prelist, the Bureau was forced to raise enumerator pay from \$5.50 per hour to \$8 per hour in six East Coast areas.

The fiscal year 1990 budget request seeks \$21 million for more competitive pay rates. These increases should improve the Bureau's position, but will not be adequate to attract a sufficient number of employees. Consequently, the Bureau also, as mentioned this morning, is reviewing various pay options, including a fullscale geographic wage rate system. We support the Bureau's efforts to make its pay structure sensitive to local labor market conditions; however, a final decision on the 1990 pay structure needs to be made soon so that recruiting efforts are not hampered.

The labor pool for potential census workers also needs to be expanded. For example, we support the need for legislation to enable Federal retirees to work on the 1990 Census without having a reduction in their benefit levels.

Let me now address to the last area and turn our attention to looking ahead for a minute to the 2000 Decennial Census. The Bureau's escalating costs and staffing difficulties are longstanding problems that will only intensify in future censuses. As a result, the current approach needs a thorough re-examination. The Bureau is making some progress in exploring innovative census strategies. For example, it is considering reducing the amount of information requested in the census and exploring other options for collecting that information.

We have previously encouraged the Bureau to evaluate the use of a streamlined questionnaire. This could increase response rates and reduce data collection and processing costs. The Bureau also

has created a 21st century planning staff to begin early preparations for future censuses. This commitment to early planning, however, must be sustained. In the past, the Bureau's planning efforts generally experienced delays, were incomplete, and failed to fully explore innovative approaches.

For example, a late start in detailed planning contributed to the Bureau's decision to discontinue consideration of optical mark recognition technology for 1990. As a result, a potentially useful technology was excluded without full exploration.

The Bureau also needs to ensure that its 1990 research and experiment program will assist in making decisions about the 2000 Decennial. A decennial census offers an important opportunity to test innovative approaches under census-like conditions.

Thus far, the Bureau has not taken full advantage of the 1990 research and experimental program. For example, the Bureau is not planning to evaluate the usefulness of a streamlined questionnaire.

In closing, we feel the Bureau is making progress in a number of key areas considering the inherent difficulties in taking a census. However, the Bureau must address some critical issues in the immediate future in order for the Nation to have a cost-effective and well-managed census. It needs to directly confront escalating costs and ensure that its pay rates are competitive. The Bureau also needs to continue its effort to prepare for the 2000 Census, because fundamental changes in census methodology may be needed.

This completes our prepared overview, and we would be happy to respond to any questions.

Senator BINGAMAN. Thank you very much.

I will ask a few questions and then defer to Senator Glenn to ask his questions.

Mr. Kincannon, on the issue of accuracy and quality of the information that comes out of this effort, I gather the disagreement or the different points of view that are reflected here are that you have \$2.6 billion budgeted, and you believe that that is adequate to accomplish the census in an accurate and high-quality way; and GAO takes the view that it will cost more and that because of our failure to plan for that additional cost, we may be in a position where we are cutting back and thereby hurting the quality of the census data that we are collecting.

Are there examples of cuts that have been planned or that you anticipate would be needed in the census outreach or promotion activities to get this thing within the \$2.6 billion?

Mr. KINCANNON. Senator, first, I neglected to introduce Susan Miskura, seated at my right, who is the Chief of our Decennial Planning Division, and will help me answer all the tough questions this morning.

We believe that the \$2.6 billion is sufficient to conduct a very high-quality census—a higher-quality census than we conducted in 1980. At the present time, I don't see that we plan now to make any further curtailments in outreach or community service workers that would affect the quality. We already have in place and had in place earlier than in 1980 workers in the field, making the connections and doing the encouragement at the grassroots level that we think will have an important effect on quality.

Senator BINGAMAN. But you have not made any cuts in these promotional activities in order to get this within the \$2.6 billion?

Mr. KINCANNON. In terms of major elements of promotion, as I say, we have not hired as many local census community awareness specialists as we had once planned to, but we have hired more and earlier than in 1980.

Another major element of promotion is our advertising campaign, which is considerably more elaborate than for 1980. We have not only the general audience campaign, but specific campaigns directed toward black, Hispanic, Asian and American Indian populations. So there is a considerable expansion there.

Senator BINGAMAN. I will ask about one specific group, because it brings it down to something that I am somewhat familiar with. We have the largest tribe of Native Americans in the country, located partly in New Mexico, partly in Arizona—the Navajo Nation. I have always felt it was extremely difficult to get an accurate count of that group, because they don't live in communities primarily; there is a large rural population, and of course, there is a tremendous language barrier—and many of these people do not speak English well.

I would be interested in knowing what you folks are planning to do, for example, to promote and ensure that members of the Navajo tribe, living on the reservations, know about and are counted in this census.

Mr. KINCANNON. Well, I agree with you that that is a tremendous challenge counting the population of American Indians and Alaska Natives, Navajos and other tribes as well. We have done a number of things. I think it is worth noting that our count of American Indians and Alaska Natives in 1980 was substantially better than in any previous census.

We have done additional things as well, though. First of all, we began in the middle of this decade a round of meetings with tribal leaders about the census, where we discussed with them our plans for taking the census, for producing products, for promotion and recruiting and outreach. We listened to their comments and suggestions on those plans. We are now this year completing a second round of similar meetings to report on the results of those considerations.

We have established for the first time an Advisory Committee on the American Indian and the Alaska Native Population, and for the past several years, they have given us the benefit of their detailed understanding of that community and learned in some detail about our plans for the census so that they could give us good advice.

Another new program is that we have asked each tribe and each Alaska Native village to designate a census liaison, a person with whom we maintain contact, provide information and receive information to help us in making sure that appropriate tribal and village authorities prepare for the census and review the preliminary results of the census so they can help us make corrections.

We think this is going to be a very important channel for recruiting bilingual speakers in native tongues who can help us with just the kind of obstacles that you suggested, including knowledge of

the way people live in those areas and where they may be living if they do not live in one spot.

Senator BINGAMAN. Well, you state that you are planning to have Spanish language and Asian language toll-free lines—I am not sure a toll-free line is the answer for the Navajo population—but in your advertising campaign, for example, will you have Navajo language advertising?

Mr. KINCANNON. I think we will not have Navajo language advertising in the sense of a general campaign—but we will have some promotional materials including pamphlets and posters, and we will work through local radio stations for native language as well as English language discussion and announcements about the census.

Senator BINGAMAN. Does GAO have any information on the extent of these promotional activities in the Native American and in the Hispanic communities? I see in my State, that the problem of undercount in these particular groups is a tremendous one. It raises great concern that we are not getting the portion of Federal funds that we otherwise would be entitled to and that we are in need of. Has GAO done any assessment as to the adequacy of the plans that the census has so far?

Mr. DODARO. We have plans to look at the 1990 activities. So far, we have been concentrating on the early census operations, so we have not looked in-depth at promotional activities. Let me ask Mr. Kaufman to talk about our reviews of that area in the 1980 census.

Senator BINGAMAN. Mr. Kaufman?

Mr. KAUFMAN. We do notice one change that the Bureau is using in this census that they did not use in the other census. That is that the Bureau does have an Hispanic advertising firm under the umbrella of the Ad Council. We think that is probably a step forward. In 1980, the Bureau did not have a specific firm for that purpose.

Senator BINGAMAN. I have been given a publication that was prepared at New Mexico State University. I guess the Census Bureau has a program to work with the American Marketing Association student chapters to prepare outreach plans, and one was provided to me here. Can you tell me what you do with these once they are prepared? Whatever happens to this?

Mr. KINCANNON. Well, I am not sure I can give a thorough report on that, Senator, but it is true that the American Marketing Association has a long, well-established relationship with the Census Bureau. We have a standing advisory committee from the American Marketing Association on all matters at the Census Bureau.

The AMA runs an annual competition for marketing students to prepare plans. They adopt a topic of the year in schools across the country, and they plan promotional campaigns, and there are winners that come out of that.

We were very pleased that the AMA adopted the 1990 Census as the topic for the 1988-89 contest, and only yesterday the two winning teams—one from the University of Virginia and one from Carnegie Mellon University—visited the Census Bureau, both to sort of see what we are really like and to present their results. Those winning suggestions or campaign plans and others, we will

use for ideas, but in terms of a national campaign, we are relying primarily on the four volunteer agencies recruited by the Advertising Council.

Senator BINGAMAN. Do you have the figures this morning, to tell us how many people who are assigned to the outreach campaign targetting minority groups, for example, the Hispanic community? If so, of those people how many are Hispanic or bilingual?

Mr. KINCANNON. No, I don't have those figures at my fingertips, but we do have a substantial number of employees involved in outreach to minority communities, and these include Hispanics, bilingual Hispanics, American Indians, Asians, and of course, blacks.

Senator BINGAMAN. Will you provide that for the Committee? I think it would be useful for us to have that.

Mr. KINCANNON. I would be pleased to, Senator.

Senator BINGAMAN. I will now defer to Senator Glenn to ask any questions that he has at this point, and then I will come back with a few additional questions.

Chairman GLENN. Thank you, Mr. Chairman.

The undercount problem is the most vexing problem you face. It winds up in court all the time, and we still have court cases left over from the last census ten years ago that have not been settled yet. Have you thought about using some of the people who are in State government or local government? I do not think it is too much to ask them once every 10 years to go through this, and maybe we can reimburse them at so much per hour. But it is in their interest to see that there is an accurate count on these things. Have we thought about using them?

Mr. KINCANNON. Well, there is no barrier to employing people who wish to work for the census and can leave their current job or do this in addition to their current job.

Chairman GLENN. Well, I'd think that States and local communities would be interested enough that they would assign people during this limited census period to do this, and we would reimburse them some figure for it—but it is in their interest to see that this gets done. They are in the communities; they are the guys out there, connecting gas lines up and all that sort of thing. They know the communities better than anybody else. I would think it is in their interest, and that is not too much to ask once every 10 years.

Mr. KINCANNON. Well, I have two comments on that. First, we do make very, very extensive use of State and local government organizations and employees in helping us to take the census.

The second would be a concern about the potential conflict of interest and confusion in the public mind about the confidentiality of data.

Let me speak first to my first point. We make very extensive use of local government employees in getting ready for the census—and State, too. I will mention some examples.

First, we established beginning in 1979 a set of State data centers, relationships with each State government, and now we have that relationship with all 50 States plus the District of Columbia and the outlying areas.

Typically, this involves a partnership of State government agencies. An example would be a unit of the Governor's office, a planning or budget unit—

Chairman GLENN. I was getting at something more fundamental, though—your problem of just getting individuals to go out and do this at \$5.50 an hour or \$8 or whatever—and it would seem to me that this might be an arrangement you could work out with some of these folks.

Let me address it from a little different angle here, if I could, too. If you can, you want to make people want to be counted—we have buttons, and we have all sorts of things; you will be doing TV, you will be doing all sorts of things. Do you have any real national marketing experts who do the designs for General Motors automobiles, and Buick and Chrysler? We sell everything from underarm deodorant to Buicks to Cadillacs to trips on ocean liners on TV by motivating people to want to do something. Now, do you have somebody of this caliber who does this on a day in, day out basis on what the most current things are to motivate people to want to do something? Are they advising you on this?

Mr. KINCANNON. Yes. Again, we are for the fourth census in partnership with the Ad Council, and they have outdone themselves this time in terms of acquiring the services of four volunteer agencies. The general campaign is being planned by Ogilvy and Mather, which is certainly in exactly the league that you are talking about. The black campaign is being prepared by the Mingo Group; the Asian campaign by Muse-Cordero-Chen firm; and the Hispanic campaign by Castor Spanish International—all firms with broad experience in marketing to these groups and selling products of the kind that you describe.

Certainly, motivation of the population to participate in the census should be amenable to the skills of women and men who are working for those firms.

Chairman GLENN. How about all the public officials? While I was listening to your opening statement—and I was paying attention, but I also was doodling here a little bit at the same time—these are just ones that come to mind—the National Governors' Association, the Mayors' National Association, the National Association of County Commissioners, National Sheriffs' Association, the Township Trustees, National Associations of Attorneys General, Auditors, Secretary of State, State Legislators, Tax Assessors, Judiciary—those are just ones I can think of that call on my office on a rather reasonably regular basis every year. These are people whose budgets are going to be affected by what happens here.

Mr. KINCANNON. You are exactly right, Senator.

Chairman GLENN. Are they gearing up for this thing?

Mr. KINCANNON. Yes, sir, I believe they are. We have made annual presentations to the meetings of groups like the U.S. Conference of Mayors, the National Conference of Towns and Townships, the National Association of Counties, the National Governors' Association. I do not recall that we have made a presentation to the sheriffs' group that you mentioned, but we have gotten pretty broad coverage of those groups, and what is more, I think we have gotten the attention and the interest of most of those groups.

The mayors particularly have been very interested, and even though some of the mayors are suing us, they are also busy getting ready to help us take the best census that we can.

Chairman GLENN. Do we have any cross-checks on this that we use? Now, this would be an enormous computer job, I know, but I am just asking the question if this has been considered or if we are doing any of this. For instance, we have records now in almost every county and every organization across the Government on things like gas company connects and disconnects, electric company, phone connects, postal, tax data. Do we cross-check or have in the computer things that will cross-check all of these to help us give an assessment of where people are and where we should go to get them?

Mr. KINCANNON. We have made some use of and have certainly done experimentation with the use of sources from local records about taxes or welfare or that sort of thing, drivers' license records. I would ask Ms. Miskura to comment on our experience with that.

Chairman GLENN. Ms. Miskura?

Ms. MISKURA. We certainly, in terms of checking the quality of the counts from the census, use information from various sources that we get on an ongoing basis, really, to do population projections and estimates, so that we do have estimates of the counts at small area levels that we use in the course of checking and finalizing the census data.

In terms of characteristics, we have used to some extent various record sources for evaluating census data. Generally, what we do on the basis of the evaluations is first of all be able to supply limitations of data on characteristics to people who are using the data, and secondly, to help plan future censuses or data collection activities to address problems that may have come up.

We do not use records to actually change census data per se, but we do use them to evaluate data and improve for the next time.

Mr. DODARO. Senator, may I make a comment at this point?

Chairman GLENN. Surely.

Mr. DODARO. It seems that many of your questions go to the question of the fundamental way that we go about taking the census. That is one of the points that we wanted to make today. For example, the use of State and local governments, the potential use of administrative records, greater use of the Postal Service are all options that need to be considered. We think there needs to be a total re-examination of how the Bureau goes about taking the census. For example, we think there are many opportunities to take advantage of State and local governments and the Postal Service, in order to help control costs. We are paying two and three times what we paid in 1970 per household to collect this information.

The Census Bureau has done a good job in promotional activities, but the fact remains that the response rate is expected to be 5 percent lower in 1990 than it was in 1980. We have raised questions about the amount of information that is contained on the form, and the fact that if that is reduced, it might improve response rates.

The concern that we have is that usually, it is during the mid-decade, like in this case, 1984, before the Bureau really started planning for the 1990 Census and had put a plan together.

In order to make some of these fundamental changes, there needs to be an early impetus. I think this Committee could play a

very important role once we finish the 1990 Census in really examining some of the options that are available.

Some other countries—for example, West Germany use the teachers, as you were alluding to, Senator, and use the State and local governments to help take the census. So we think there is a need, and a real push needs to be made to do this.

Mr. KINCANNON. I would like very much to note that, yes, West Germany does use local government officials to take the census, and that was a key component of a Constitutional crisis that resulted in the stopping of their last census 2 weeks before census day and delaying it for more than 2 years. So we are quite sensitive on that as an opportunity for improvement or difficulties as well.

Chairman GLENN. Staff just told me you have full authority to do that if you want to do it, in the legislation that he referred to a moment ago.

What you are trying to do is develop a mindset overall that says people want to be counted, not the other way around. That is an enormous sales job. You are going to need governors, you are going to need everybody under the sun, you are going to need the best of TV, and then, if that does not work we are saddled with this business of coming up with some sort of formula that you are trying to base on figures that are more reliable than the census figures which—if you had that capability, you would use those figures to begin with.

Mr. KINCANNON. Well-said.

Chairman GLENN. So you really end up with an impossible thing where, well, you just sort of give it a little Kentucky windage, and you hope it comes out right, and you think there are about this number of people around, but you do not really know for sure.

So if we can get people in the frame of mind that it is to their advantage to their family to be counted—you don't have to be citizens—you don't count just citizens; you count every body and soul that are supposed to be within our borders in that time period. What makes it so difficult is a lot of people, if they have a question about it, you know what happens: You go into one of the barrios in Miami, and you are a Government guy, or you are representing the Government with a clipboard, and people scatter like quail.

Somehow, we have got to get over that mindset and do it all across this country so people realize it is to the benefit of their family, a personal benefit, instead of a detriment to them to be counted.

Thank you, Mr. Chairman.

Senator BINGAMAN. Thank you very much.

Senator Carl Levin is a member of our Subcommittee. We are very pleased to have you here, Senator. Do you have an opening statement or questions?

Senator LEVIN. I think I'd like to catch up with Senator Glenn for a moment before he leaves.

Senator BINGAMAN. Okay. I will ask some questions while you are doing that.

I would like to ask about another issue that has been of concern to me. Under what circumstances will the Census Bureau perform special tabulations resulting from the 1990 Census at the request of a private firm? Is that something that you presently do or antici-

pate doing based on the 1990 Census, and if so, how is this special tabulation of information paid for, and who has access to it?

Mr. KINCANNON. Yes, we have for many years performed special tabulation services for private firms or nonprofit firms or State or local governments, for that matter, and this is done on a fully cost-reimbursable basis. The organization wanting the work pays for all the marginal costs of doing whatever additional tabulation they want done.

We can carry out that work so long as it does not interfere with the public's business and is otherwise consistent with our mission. Of course, no organization outside the Census Bureau gets individual confidential information.

The information in the special tabulation becomes available also to the public after a very brief period, I think, depending upon the nature of the contract with the private firm or local government organization.

Senator BINGAMAN. My concern with it is I certainly can see a justification for doing additional tabulations and permitting the private sector to pay for them, but I have some concern with the idea that a quid pro quo for this would be that we would not make this newly-tabulated information available to the public for some period. That seems to me to be questionable, and I would like to know if it is your practice to do this essentially on-hire for a private firm and, as part of the arrangement, agree not to make that available to the general public.

Mr. KINCANNON. Let me clarify that. It is available to the public free, free access, after a certain period of time. But even within that period of time, if someone else wishes to come forward and pay a pro rata share of the cost so that we could refund that amount to the original payer, then they can have access at any time.

We simply felt that it was not fair to have someone pay for something and then the next day someone else could get it free. But any other member of the public can get the information if they are willing to pay a share of the cost of that special tabulation.

Senator BINGAMAN. I understand your argument that maybe it would be unfair to the firm that is coming in and paying the additional sum. But I can also see the argument that it is unfair to the taxpayer, who has paid \$2.6 billion to get this information collected in the first place, for you to then say that there are certain additional manipulations of this that you are going to do, and make it available exclusively to a firm that will pay some marginal additional amount.

Has GAO looked into this question? Is this something that you have taken a position on?

Mr. DODARO. No, Mr. Chairman, we have not really looked into this issue.

Senator BINGAMAN. Have you had complaints about this, or am I the only one who has ever raised this question?

Mr. KINCANNON. Oh, we have had complaints on almost everything we do or do not do, Mr. Chairman.

Senator BINGAMAN. But no particular complaints about this.

Mr. KINCANNON. I would say small in number and not much on that particular point. I guess I would make the point, also, that if

this were information for which we had identified sufficient public need and utility that a determination would have been reached in conjunction with the Congress to fund that tabulation.

Senator BINGAMAN. My concern is, you said that you are going to spend \$2.6 billion on this census, and that you will do all you can for \$2.6 billion. If, in fact, there are some things still undone at that point, do they just all fall into the category of things that you did not determine were adequately or sufficiently important to have done?

What is the fallback—suppose you get a long way through this process and run out of money? What is your position at that point? Does everything else just have to get paid for by the private sector, or are you back to the Congress, asking for additional funds?

Mr. KINCANNON. Well, sir, I think we would be back at the position of either reassessing our own priorities as to which things remaining to be done were most important, and then considering the question within the Administration and subsequently with the Congress as to whether additional public resources were merited to produce a public good.

Senator BINGAMAN. There is a post-enumeration survey that you do, and I gather that the expected number of people covered by that has dropped. You were planning to do it for 300,000; you are now planning to do it for 150,000; is that right?

Mr. KINCANNON. We planned as a part of what I might call the base census—that is, one that was approximately equivalent in quality and so on to the 1980 Census—for a post-enumeration survey of 150,000 households. The design of that sample would produce evaluation results considerably more robust than the analogous post-enumeration effort in 1980.

We requested funds from the Congress for that, and although it remains to be seen what final action will be taken on 1990, we have not heard disagreement about that.

The Administration determined that we did not want to enlarge that post-enumeration survey because a larger-size survey was related only to the need to adjust census results, and since there was a determination reached not to perform that adjustment, we did not request funds for an expanded post-enumeration survey.

Senator BINGAMAN. So that there was not a change—I mean, my information is wrong then—you did not plan to do a 300,000 individual post-enumeration survey and then cut it to 150,000.

Mr. KINCANNON. We planned to do 150,000 households as part of the census as we routinely conduct it. We also planned to add an additional 150,000 housing units had it been determined that we would use that as a potential basis for adjusting census results. Since we determined that we were not going to do so, we did not request the funds for the additional 150,000 households.

Senator BINGAMAN. How was the decision made not to use this for adjusting results?

Mr. KINCANNON. Well, as either you or Senator Glenn noted, the Government is currently in litigation with a group of parties interested in this matter. The determination was reached by the Commerce Department and announced October 30th of 1987. And, having just spent several days in depositions, I think I would be prudent not to wander at will through the circumstance and ra-

tionales behind that decision, but we would be glad to provide to you and to members of the Subcommittee copies of the Government's brief and affidavits and other matters in that case.

Senator BINGAMAN. Okay. Does the GAO have any comment with regard to this post-enumeration survey and the adequacy of doing it with 150,000 households?

Mr. DODARO. Yes, we do have a couple comments on it. One, Mr. Chairman—I want to just go back to the 1980 Census for a minute—if I recall correctly, the Bureau had a 250,000-household post-enumeration survey planned for 1980, but then it was substantially revised at the end because of budgetary concerns and some time constraints. So we really never had a post-enumeration survey done.

We also have monitored the post-enumeration surveys as part of the dress rehearsal for 1990 and the Los Angeles pre-test. The Bureau has had some difficulty completing the post-enumeration surveys within the time frames that they had set forth. So we have some questions in our minds from an operational standpoint whether it can be pulled off within the time available.

Senator BINGAMAN. Whether the 150,000-household post-enumeration survey can be pulled off in the time frame; is that what you are saying?

Mr. DODARO. Right; based on the experience that they have had so far.

Senator BINGAMAN. But you are not disagreeing with the size of the post-enumeration survey that the Census Bureau is planning to go forward with?

Mr. DODARO. Not for the purposes for which they were planning to use it.

Senator BINGAMAN. Okay, thank you.

Senator Levin, do you have some questions of these witnesses?

Senator LEVIN. Yes, thank you, Mr. Chairman.

On the undercount issue, I have a couple of questions. One is on the budget for enumerators and for outreach. What was the request of the Census Bureau for that part of your budget, to try to get as big a count as you can through adequate enumerators and through the outreach program?

Mr. KINCANNON. I do not recall the specific figure. It may be that Ms. Miskura, who is with me, can recall that; if not, we will certainly provide it for the record.¹

Senator LEVIN. Do you remember whether or not it was reduced by OMB, either in advance or after you put it in?

Mr. KINCANNON. For fiscal year 1990?

Senator LEVIN. Yes, start with 1990.

Mr. KINCANNON. For fiscal year 1990, I do not recall a reduction by OMB in those categories, no.

Senator LEVIN. Are you going to make a request for outreach and for enumerators in the fiscal 1991 budget?

Mr. KINCANNON. It is included in the fiscal 1990 budget and in the fiscal 1989 budget. As a matter of fact, we have been allocating funding to outreach activities at least since fiscal year 1985.

¹ See question No. 39 on p. 73.

Senator LEVIN. All right, now, have all your funding requests been granted for outreach activities and enumerators from OMB?

Mr. KINCANNON. Well, I am not sure I can recall that in detail, but I do not recall a dispute with OMB about funds for outreach or for enumerators—am I correct in that?

Ms. MISKURA. That is right.

Senator LEVIN. Now, is that because they granted what you wanted, or because you were given some directive in advance of making your request?

Mr. KINCANNON. No; it is because they granted what we asked for.

Senator LEVIN. Okay. So you have gotten everything you have asked for?

Mr. KINCANNON. Well, in regard to those two things.

Senator LEVIN. Well, what other parts of your budget have been cut which could lead to a greater undercount?

Mr. KINCANNON. Well, the Congress in the last 2 years cut \$75 million out of the President's request for the census—

Senator LEVIN. What part of your operation?

Mr. KINCANNON. Part of that was for a contingency fund in case we got into the sort of difficulties that we don't now anticipate, but that Mr. Dodaro from the GAO is concerned about.

Senator LEVIN. Okay. Anything else? Any other cuts by Congress or OMB?

Mr. KINCANNON. What were the other cuts by Congress in that period?

Ms. MISKURA. There were very few specific cuts. They were basically general kinds of cuts or instructions for absorption.

Mr. KINCANNON. Yes. I think basically that is an important point, that neither the Congress nor in general OMB have focused on the managerial details of the census program by program in that sense, in terms of cutting budget. But there have been reductions across-the-board, as it were. We may be able to provide additional information for the record.

Senator LEVIN. Would you do that; let us know what cuts came through absorption or other means?

Mr. KINCANNON. Yes, sir.

Senator LEVIN. If a community were to train and pay for additional enumerators on their own, that met your standards of training, would you accept them as official enumerators?

Mr. KINCANNON. We would only have as enumerators people who we employed as our employees and paid as our employees—but we are very interested in referral of workers and of training of workers. I could offer as a concrete example that we have opened one of our seven processing offices in the City of Baltimore. The City Government worked out an arrangement with us whereby they would train workers to meet our standards for keying data, for example, and we would in turn guarantee to hire people out of that program that met the standard. So that is very—

Senator LEVIN. Well, my question is a little different, though. You have a certain budget, I presume, for each area, or each community. Do you allocate enumerators by some formula?

Mr. KINCANNON. Well, we hire the number of enumerators indicated by the type of work required in that community.

Senator LEVIN. All right, so you have some kind of a formula?

Mr. KINCANNON. Well, yes, roughly.

Senator LEVIN. So you decide that this community should have 10 enumerators, let's say—I am just picking a number out of the air—you allocate 10 enumerators, and 10 are there, and you train them. Now, if that community said, "We will pay for an additional five enumerators; we don't think your 10 are going to find everybody here, and we are willing to pay for an additional five"—would you let them do it?

Mr. KINCANNON. I do not think that we would let them hire enumerators and turn work over to us.

Senator LEVIN. If they gave you the money to train more than your formula indicated was the adequate number for that community, would you let them give you money for additional enumerators for their community?

Mr. KINCANNON. I would have to reflect on that. I don't believe that is inconsistent with the law; it might raise questions about whether wealthier communities got a different quality census than poorer communities.

Senator LEVIN. Would you give some thought to that, because usually the wealthier communities have very little undercount, and probably would not invest too much in getting to an undercount. Whereas poorer communities are poor for many reasons, but one of the reasons is that there is an undercount that helps to keep them in poverty. There are a whole bunch of programs that they are either not eligible for, in some cases, literally not eligible for, because they don't have quite a large enough number, or because the allocation of funds based on population is based on an undercount.

Could you give that a little thought and get back to us on that?

Mr. KINCANNON. We would be pleased to.

Senator LEVIN. Do I have a few more minutes, Mr. Chairman?

Senator BINGAMAN. Sure.

Senator LEVIN. Is there a growing feeling among statisticians that there are more and more accurate ways of adjusting for the undercount in a statistically valid manner?

Mr. KINCANNON. Well, Senator, one of the comments I made when you, I believe, were out of the room for a moment was that we are in the process of litigating—the Government is being sued by the City and the State of New York and other parties regarding this particular issue, and I am very sensitive to the fact that I probably should not discuss that in detail—

Senator LEVIN. Is that the issue in the lawsuit as to whether or not you should be allowed to adjust for the undercount?

Mr. KINCANNON. Well, I believe I'd just as soon—that would be a layman's summary of the key issue in there. But I would be glad to provide to you copies of the Government's brief and affidavits, if you would be interested in seeing that.

Senator LEVIN. Well, let me ask this question, a very fundamental one—do you adjust for the undercount?

Mr. KINCANNON. No, sir.

Senator LEVIN. Okay. Then, someone is suing you, trying to force you to adjust for the undercount?

Mr. KINCANNON. That is correct.

Senator LEVIN. Okay, fair enough. I understand. If you could provide that information to me privately, I would appreciate it. I misunderstood what that lawsuit was about; it is an effort to require you to adjust for undercounting.

Mr. KINCANNON. That is my understanding of the remedy sought.

Senator LEVIN. Okay. Do you now impute in certain situations population to housing units?

Mr. KINCANNON. In certain situations, yes.

Senator LEVIN. Where you don't have a count inside the unit, but you know that it is occupied.

Mr. KINCANNON. Yes.

Senator LEVIN. All right. And that has been affirmed by a court, as I understand it.

Mr. KINCANNON. That is correct, Senator.

Senator LEVIN. Okay. Senator Glenn asked about the use of the Postal Service or you made reference during one of his questions to the Postal Service. Do we have a cross-check with the postal delivery people, letter carriers?

Mr. KINCANNON. We ask them to check the mailing list that we compile in those areas of the country where we do that, which covers most of the population. We ask them to do casing checks and to advise us where we have an address and they do not have one, or vice versa, or where we may have what they have identified is a commercial address rather than a residential one.

Senator LEVIN. Do you have a way of giving the Postal Service the number of people that you have for each unit and asking them whether they have any reason to believe there may be more or less people?

Mr. KINCANNON. No, we do not do that.

Senator LEVIN. Would that violate any privacy law?

Mr. KINCANNON. Yes, I believe it would.

Senator LEVIN. Just with the number.

Mr. KINCANNON. I think it would, Senator.

Senator LEVIN. Without even the names?

Mr. KINCANNON. Yes.

Senator LEVIN. So in other words, if you gave a letter carrier a list that said at that address, you believe there are four people, at the next address there are three, at the next address there are five, just that kind of a list, and asked them as they delivered the mail over a period of a month or so, do they have any reason to believe that there is a different number or more at that area than some other area; do you think that that would violate the restrictions on privacy?

Mr. KINCANNON. Yes. My response without reviewing it is that that would violate the law. We do provide to local governments counts of housing units and population by block—I think I am correct in saying—

Ms. MISKURA. Housing by block.

Mr. KINCANNON [continuing]. Housing by block—population by somewhat larger areas, for checking.

Senator LEVIN. Would it violate the law for the letter carrier to give you the list of what the letter carrier believes to be the correct occupancy of a house?

Mr. KINCANNON. Well, I cannot speak to their statute in detail, but I know the Postal Service is prohibited from compiling a mailing list——

Senator LEVIN. No, I am not talking about the names; I am just talking about the numbers of people——

Mr. KINCANNON. Even lists of addresses they are, as I understand it, prohibited from compiling.

Senator LEVIN. Would it be useful to you if they weren't prohibited to have a list from the Postal Service of what the letter carrier believes to be the accurate number of people in each home on the letter carrier's route?

Mr. KINCANNON. My personal opinion is it would not.

Senator LEVIN. It would just be too jumbled?

Mr. KINCANNON. I think that it would tend to be—my personal experience is that it would tend to be accurate in those areas where we are accurate and not very good in areas where we are inaccurate.

Senator LEVIN. One more question?

Senator BINGAMAN. Go right ahead, Senator.

Senator LEVIN. You estimate the undercount. There is a chart here which indicates what your change is in the census undercount for black and white citizens——

Mr. KINCANNON. Persons—not citizens, Senator.

Senator LEVIN. Yes, I am sorry. Persons. It shows that that undercount was lower in 1980 as a percent than it was in 1970 and so forth.¹ How accurate is that estimate?

Mr. KINCANNON. Well, they are the best figures around. No one can say with perfection what those numbers are. We use a number of means of evaluation including separate, independent surveys of some areas, for comparison, and the use of what we call demographic analysis, which is basically births, deaths, comparative age distributions between censuses, and what we have in the way of immigration efforts, including some tentative assessment of undocumented immigration, to compare those.

Senator LEVIN. Would you do two things for us for the record—one, would you give us in some detail the method, the way you estimate that undercount?

Mr. KINCANNON. We would be pleased to.

Senator LEVIN. And secondly for the record, or you could do this maybe privately—I don't know what the rules are of the Subcommittee here—but in order to avoid any interference with that litigation, could you brief us in some appropriate way as to the thinking of your statisticians inside the Census Bureau relative to the efficacy of making an accurate adjustment—reasonably accurate adjustment—of census figures to address the undercount issue. In other words, if that is a problem in terms of your lawsuit—you don't think you should make that adjustment is what you are saying in that lawsuit, and that someone is trying to force you in a court of New York—is that correct—a community in New York——

Mr. KINCANNON. Yes, that is correct.

¹ See p. 186.

Senator LEVIN [continuing].—If you could somehow or another appropriately brief those of us who might be interested in such a briefing as to the current thinking of the professional statisticians, perhaps on your staff, on that issue, I would appreciate it.

It seems to me we may be getting to the point where we would like to argue, at least some of us, that that kind of an adjustment can be made, and before we can do that it seems to me we have to have some information from you, because we cannot make that argument intelligently without your own input.

Mr. KINCANNON. Well, I very much appreciate your solicitation of our views on that, because I think that is quite germane to the argument. I will have to seek advice of the Justice Department on that, and we will provide you such information as we can.

Senator LEVIN. That would be great. Thank you.

Mr. KINCANNON. Thank you, Senator.

Senator LEVIN. Thank you very much, Mr. Chairman.

Senator BINGAMAN. Thank you, Senator Levin.

I have one additional question before we dismiss this panel, and it relates to the 2000 Decennial Census.

The GAO takes the position that we need fundamental changes in the census methodology for the year 2000. What are you recommending that this Committee do to bring that about?

Mr. DODARO. One of the things we would suggest, Mr. Chairman, is an active oversight role once the 1990 Census is complete; to basically engage in a dialogue with the Census Bureau to be able to challenge them to seek alternatives.

We have made recommendations to the Secretary of Commerce that are similar to that, to basically encourage the Bureau to look at innovative ways. I think our basic recommendation is that the Bureau cannot wait until the middle part of the decade to begin thinking about such changes.

As we pointed out in response to some earlier recommendations we have made, the Bureau has established a planning staff to begin thinking about these activities. But unless some serious consideration is given early in the next decade about changing these methodologies, by the time we would get to 1995, it would be too late. Essentially, that is the pattern that we have fallen into over the years. Without any thinking in the early part of the decade, the Bureau basically makes some modifications and some changes. The Bureau has made some important improvements, as we pointed out, and I do not want to detract from those—but basically the structure of how we go about taking the census has not changed, fundamentally, for many years. The Bureau needs to start thinking earlier in the decade about innovative approaches to collecting this data. I think that whatever this Committee could do to work with the Bureau and provide some encouragement, some oversight and dialogue to make that happen, it would benefit the country in the long run. As you mentioned earlier, the needs of the country are changing, and basically, we have our traditional approaches still in place to collect the information.

We may want to go to a more streamlined census, where the focus is on population count solely, and look for other alternative means to collect housing and income and social characteristics on a

more current basis. But in order to do that, I think we need to have a dialogue early.

Senator BINGAMAN. All right. Thank you both very much.

Let me just alert you that we will have some additional questions that we would like written responses to. We will submit them and hope to get a prompt reply so we can include those in the record.

We thank you both very much for appearing today.

We now welcome the next panel which includes Peyton Young, Michael Stoto, and Edward Spar. Thank you, gentlemen, for meeting with us today.

Let me just ask you to testify in that order. Mr. Peyton Young is a guest scholar at the Brookings Institution and is a professor of public policy at the University of Maryland, as I understand it. If you would go ahead and summarize your testimony, we will include your full testimony in the record, and if you would make whatever points you want to, either in response to some of the things that were earlier said, or on other subjects, we would be anxious to hear it.

TESTIMONY OF PEYTON YOUNG, GUEST SCHOLAR, BROOKINGS INSTITUTION, AND PROFESSOR OF PUBLIC POLICY, UNIVERSITY OF MARYLAND, COLLEGE PARK, MD

Mr. YOUNG. Thank you, Mr. Chairman.

I do have a prepared statement that I would like inserted in the record,¹ and I will try to keep my remarks fairly brief.

I want to address two points; first, the uncertainties that are inherent in trying to project results of the 1990 Census and the consequent reapportionment of the House.

Secondly, I want to call attention to a little-known and peculiar property of the current apportionment formula, which has an impact on small versus large States.

As you have already noted, the original purpose of the census was to keep the apportionment of seats in the House of Representatives up-to-date. Of course, it has expanded greatly beyond this original purpose, and is now used in any number of grant-in-aid formulas that involve many billions of dollars. My remarks will concentrate, however, on the original purpose of the census; that is, the apportionment of the House of Representatives.

I should begin by remarking that the census numbers also apply to the apportionment of representation within States, at the legislative, county, and township levels. Therefore, the accuracy of the head counts provided by the census at the local level are also germane to one person, one vote.

Meeting this standard is made all the more difficult by the fact that the courts in recent years have insisted on an ever more exact definition of mathematical equality between districts, and are now throwing out districting plans which have variations in population between districts of less than one percent. This also creates an additional burden on the Census Bureau to provide accurate head counts at the local level.

¹ See p. 146.

Let me turn, however, to the question of the projections that the Census Bureau provides for 1990. When we look at such projections, we are tempted to say that this is definitely what is going to happen. Let's see how many seats are going to shift, and make political calculations on the basis of that.

I want to try to urge the Committee that this would be a mistake; that in fact, the margin of uncertainty in these projections is surprisingly large.

The only way that we can get a handle on this, or at least, that I can get a handle on it, is to look at what has happened in the recent past. In 1979 the Census Bureau published three series of projections for 1980. The mere fact of publishing a series shows that they were uncertain about what 1980 would bring, which is perfectly legitimate.

I took the middle series, Series B, and compared it with what actually did happen in 1980—just one year later, or one and a half years later, depending on how you think about it—and the results were quite different.

On the basis of that estimate, I looked at the most recent projection for 1990. I then did a computer simulation to determine if a similar pattern of uncertainty holds for the current projection as did in the 1979-1980 comparison, how wide a variability we might see in the way that the House is reapportioned. The results are quite remarkable.

For example, California is projected to increase by about 5 seats. However, if one does a computer simulation to test the confidence interval for this projection, one finds that California might, with reasonable probability, gain anywhere from one to 11 more seats. New York is scheduled to lose three seats, to a total of 31. However, if one looks at this computer simulation, one finds that it might lose no seats, or perhaps as many as five seats.

Of course, losing three seats is in the middle between losing zero and five seats. But I am trying to suggest that with a reasonable probability, meaning a non-negligible probability, any one of those scenarios could develop in which the number is entirely different.

As a matter of fact, in the computer run that I did, New York actually gained a seat in one case.

By region, one can say that the South will probably gain somewhere between 5 and 13 seats, and the West, 3 to 12 seats. The Midwest will probably lose between 7 and 14, just about balancing the South; and the Northeast will again just about balance the West, losing between 3 and 10 seats.

In Tables 1 and 2 of my testimony, you can refer to more details about this matter.

This may give you some notion of the confidence that we might attach to the current projection about 1990 and the caution with which we should, in my opinion, incorporate these into political calculations and plans. In pointing this out, I am not trying to suggest that the Census Bureau is not doing its job. On the contrary, what I am saying is that forecasting in any field, be it the stock market, the weather, or the census, is inherently subject to a great deal of uncertainty. It is very perilous business indeed, and one has to interpret such projections with great caution.

Now let me turn to a matter that is perhaps not terribly well-known, but I cannot resist calling attention to it. I refer to a peculiarity in the current apportionment method. Now, apportionment is a very peculiar process in any case. The current method is one of the more peculiar of the peculiar methods however. It involves square roots, for example. If you tell that to the man on the street, he might understandably become alarmed that their representation is being determined by square roots.

The method is rather catchily known as "the method of equal proportions." It was invented by Joseph Hill, who was a statistician at the Census Bureau in the early part of this century. After a great deal of political wrangling, it was adopted in 1941. One of the reasons it was adopted is that it supposedly treats small and large States even-handedly.

In fact, extensive study of the matter shows that this just is not so. One can show theoretically, and by looking at past data, that the current method, which I call Hill's method, generally gives less representation per inhabitant of large States than it does to inhabitants of small States. This is true even if we eliminate from consideration the very small States that, by the Constitutional requirement, have to get one seat in any case. So take all of those States out and look at the next-to-smallest States, those which get two and three seats. What I maintained just now is still true, and this bias is on the order of 3 percent.

Now, recalling that the courts have held in within-State districts that even discrepancies of one percent or less are unconstitutional, one definitely has a question here. This pattern is almost certain to recur in 1990. In running these simulation studies, one of the few things that comes out as almost certain to occur in 1990 is this bias in favor of small States. It has also been observed in every apportionment since the method was adopted in 1941.

Naturally, you yourself, Mr. Chairman, being from a smaller State, may not want to hear some of this. But I think that the larger issue here is one of fairness, and I believe that the Senate and in particular the House ought to consider it.

I would conclude, then, with two points—first, that there is so much uncertainty surrounding those projections that the most one can safely say is that somewhere between 10 and 25 seats will shift from the North and East to the South and West. Beyond that, specific State-by-State projections are folly.

Thomas Jefferson said something a propos of this in connection with the first apportionment bill of 1792—which, by the way, was vetoed by George Washington. He said, "No invasions of the Constitution are fundamentally so dangerous as the tricks played on Congress' own numbers—apportionment."

Thank you, Mr. Chairman, for your attention.

Senator BINGAMAN. Thank you very much.

Mr. Michael A. Stoto, our next witness, is Chairman of the Advisory Committee on the Census of the American Statistical Association. We appreciate your being here.

TESTIMONY OF MICHAEL A. STOTO, CHAIRMAN, ADVISORY COMMITTEE ON THE CENSUS, AMERICAN STATISTICAL ASSOCIATION

Mr. STOTO. Thank you, Mr. Chairman, I, too, have a longer statement which, with your permission, I would like to insert into the record.¹

Senator BINGAMAN. We will include it in the record.

Mr. STOTO. There are three issues that I would like to address this morning. First, I believe that the 1990 Census research and evaluation program, which we heard something about in the earlier panel, is a critical component of the overall census-taking activity and needs to be assured of high-priority attention in census operations and budgeting.

Second, I think that this is especially true for one component of that program, the post-enumeration survey, in part because of its relationship to the undercount problem.

Third, I am concerned with some recent actions that have restricted the Bureau's openness to the scientific community. We have seen some evidence of it even this morning, with Mr. Kincannon's inability to talk about the issues involving the undercount and adjustment.

I am speaking today as the Chair of the American Statistical Association's Census Advisory Committee, which is both a committee of the Association as well as an official Commerce Department advisory committee. I am also a member of the Panel on Decennial Census Methodology of the Committee on National Statistics, the National Research Council. My views have been shaped by my service on these two committees, but except for where I quote from official positions that they have taken, the comments in this testimony are my own.

Because the census is carried out only once every 10 years, the research and evaluation program is critical to its short-term and long-term success. If something does not work out well the first time, the Bureau cannot go back and do it better. This means that the Bureau has to learn as much as possible at census time to help interpret and perhaps correct the data that it has, and to improve census-taking the next time.

Furthermore, it is difficult to learn how new census techniques will work except by experimenting with them in realistic circumstances. Therefore, 1990 is the last opportunity to try out some innovative ideas for the year 2000 Census.

The Bureau's research, evaluation and experimentation program, which is called REX, was designed to deal with these realities. The program has three major components. The first component is coverage evaluation. The basic questions are how many people were not counted in the census and where they are located. Coverage evaluation also tries to discover the kind of people who were missed and why they were missed. This information can be used to devise better census procedures for the year 2000 and later. Moreover, if these questions can be answered accurately, it may be possible to adjust the raw counts for an undercount.

¹ See p. 160.

The second REX component is content evaluation. The aim is to estimate the bias in the figures that are collected. For instance, this program might explore whether income is accurately reported, patterns of reporting of race, ethnicity and nationality, and so on. Information of this sort is useful to researchers and policy analysts who want to understand what the data really mean.

Content evaluation information is also useful for improving future censuses. Content evaluation techniques generally involve some sort of re-interview of a sample of individuals who filled out census forms, often with some means of getting more accurate data for comparison.

The final component is operations testing and development. This addresses both current and future census operations. One goal is to discover which operational aspects of current census-taking work well and are most efficient. This includes looking at address-listing operations, mail-out, mail-back procedures, office procedures, coverage improvement techniques, and so on. This program also provides a way to field-test potential innovations for the next census, or later, in realistic settings. For instance, it is important for the Census Bureau to explore procedures that are less labor-intensive and involve new uses of computer technology.

The census advisory committees have been discussing the plans for the 1990 REX program with the Bureau for a number of years. I would like to report that all is well, but I must say that some committee members are concerned that these plans are not as well-developed as they ought to be at this point in time. For instance, the ASA Committee said at its spring 1988 meeting that it was "concerned that the plans are still vague and incomplete at this late date". At its fall meeting, the ASA Committee said that "at each of its last two meetings, the committee made serious recommendations about the REX program, especially concerning testing and evaluation of new census procedures and technologies, and preparing for an adjustment for an undercount in 1990 or 2000. The recommendations seem to have in large part been ignored. If progress has been made in these areas, the committee would like to see an in-depth report at the next meeting."

The Bureau responded just last month that it did take the committee's recommendations seriously and that planning was continuing and that all was well. There was, however, no report on the overall REX program at that recent meeting.

I would like to be able to assure you that the 1990 REX program is on track, but neither of the Census Advisory Committees have been given enough information to make that judgment.

In the general nature of things, evaluation, which has long-term payoffs, tends to get less priority than operations, which have immediate payoffs. This is especially so for an activity as complex and operationally demanding as the Decennial Census.

For all of the reasons outlined above, however, the REX program is a critically important component of the overall census activity. The Bureau must give high priority to its research and evaluation program and to the prompt publication of its results. The Bureau has generally been successful in the past at paying serious attention to the evaluation of its own activities, and this tradition must be continued.

The keystone of the Bureau's REX program is the 1990 post-enumeration survey, or the PES. It is important because of its relationship to persistent differential undercounts in the Decennial Census, which have been referred to earlier.

The Bureau's coverage evaluation efforts have shown a consistent differential undercount of blacks, going back decades, and indications of serious undercounts for other groups defined by ethnicity and socio-economic status.

New York City and State sued the Bureau to adjust in 1980, but the Bureau successfully argued that the best statistical judgment at that time said that adjustment was not feasible. Because of the heightened concern with this issue, however, the Bureau carried out a special research program centered on the PES through the 1980s, and there were positive indications that adjustment might be justifiable on statistical terms in 1990. Many statisticians inside and outside of the Bureau felt that this research was promising and should be continued, and that the Bureau should proceed with the activities necessary to prepare for a possible adjustment following the 1990 census.

Despite this, the Department of Commerce decided in 1987 not to adjust the 1990 Census. The Bureau cited concerns about operational feasibility, that is, the ability to carry out the operations needed for an adjustment in a timely fashion without interrupting other census activities. These concerns may be valid, but they have never been fully discussed in detail with any of the census advisory committees or other outside scientists, so I am in no position to judge that.

The effects of the Department's decision go far beyond adjusting the 1990 Census per se. First, the Bureau has severely cut back on critical research efforts, on standards to guide a decision about adjustment, and research on how to translate an estimate of the undercount into an adjustment of population figures.

Second, it has scaled back the size of the post-enumeration survey and given it lower operational priority.

The Department's decision was reviewed last spring by three technical advisory committees—the two of which I am a member and the Census Advisory Committee on Population Statistics. The Panel on Decennial Census Methodology said that a largescale PES remains vitally important for four reasons: First, it is a necessary foundation for an adequate coverage evaluation program. Second, planning for the Census of 2000 will depend critically on the results of the 1990 Census coverage evaluation. Third, it may become necessary or desirable to adjust the 1990 Census for coverage errors. Fourth, a largescale PES in 1990 will put the Census Bureau in a better operational position to consider the feasibility and desirability of adjustment for the Census of 2000.

The panel feels that the presently planned PES size of 150,000 households is a bare minimum. It urges that any pressures to reduce it be firmly resisted and that, if possible, the size be increased. The ASA and the population committees reviewed these recommendations and endorsed them.

In addition to the reasons given by these committees, I would add one more. Even if the census per se is not adjusted for the undercount, it may be feasible and desirable to adjust the estimates of

the population that the Bureau will make on a regular basis throughout the 1990s. These estimates are important in their own right, because of their use, for example, as denominators in biostatistics, and also in the distribution of Federal funds. They are also used to construct weights for the current population survey and other critical national data sources. A careful, large-scale post-enumeration survey will be needed to make these adjustments in an acceptable way.

I am concerned that the Bureau will be ordered to adjust the census figures and that it will not be in a position to do it well. The Bureau seems to be playing an all-or-nothing strategy with no backup position in case they are ordered to adjust.

Let me stress that the issue here is not whether to adjust the 1990 Census. I believe that that decision should be made by the Bureau on scientific grounds, not by the court, by the Congress or by the Administration on partisan grounds.

The concern is that the premature decision not to adjust may make an acceptable adjustment impossible and may put the Bureau in the very difficult position of having to adjust with poor data.

My final point has to do with secrecy and openness. One additional casualty of the undercount adjustment debate has been the Bureau's longstanding policy of openness to scientific criticism. Last year, as you know, New York and others filed a suit to restore the post-enumeration survey and to adjust the census in 1990. The Bureau's response, citing legal counsel, has been to stop discussing the issue with the professional community. This means that the official advisory committees cannot do their work properly and that scientific help and criticism are shut off.

The problem is deeper than secrecy about the New York case, however. For instance, independent statisticians who spoke at the Bureau's own annual research conference in 1988 were required to take the word "adjustment" out of the titles of their research papers, presumably to please the Commerce Department. On another occasion, at the 1987 meeting of the Census Advisory Committees, the Director of the Bureau assured the members of the ASA and other committees that no decision had been made about adjustment, when in fact, a decision had already been made by Commerce.

On their own, such incidents might not be cause for concern, but these actions undermine the scientific community's high regard for the Bureau. Credibility is the Bureau's most important commodity, and its tradition of openness has served both the Bureau and the Nation well.

This position must be maintained.

Thank you, Mr. Chairman.

Senator BINGAMAN. Thank you very much.

Our final witness is Edward J. Spar, who is President of Market Statistics, Inc. We are very pleased to have you here.

**TESTIMONY OF EDWARD J. SPAR, PRESIDENT, MARKET
STATISTICS, INC.**

Mr. SPAR. Thank you, Senator. Senator, I too have a more lengthy testimony which includes three tables—a list of data most often used by the private sector, geographic areas utilized by the private sector, and a data versus application chart. I would request that these tables and the full testimony be included in the record.¹

Senator BINGAMAN. We will include it all in the record.

Mr. SPAR. Our major publication is the "Survey of Buying Power," an annual compendium of demographic and socioeconomic information which is used by over 65,000 marketing, sales and advertising executives and analysts. Further, we consult annually with over 500 major corporations in the uses of demographic information to help them solve their marketing problems.

Before discussing the issues facing us in the United States, I am reminded of an experience I had last year in Cairo, Egypt, at a conference on dissemination of government statistics. At this conference, many countries did not even have the philosophical construct of what dissemination meant to any defined user community. I point this out first to point out how advanced we really are and what a fantastic job our Federal statistical agencies are doing—more on that later.

The four topics I would like to briefly discuss are: one, the importance and uses of census data for the private sector; two, potential problems with regard to 1990 Census dissemination plans; three, implications of any 1990 Census budget shortfall from the perspective of dissemination; and four, policy implications.

I would like to limit my remarks to a specific aspect of census data use, namely, the areas of marketing.

First, when we speak of census data, it is either in the form supplied to us by the Bureau, the same data but repackaged, or in some other form as updated information. In any of these cases, the critical benchmark is still census-based information.

Census data are used in probably every industry for purposes ranging from multi-million-dollar product development decisions to the small radio station in some non-metropolitan county that might charge anywhere from \$5 to \$25 for one minute of advertising.

I have narrowed the basic uses of census data into 10 questions, and there have been books written about each one of these, but just by listing them, it gives you an idea of the needs for information.

What is our share of market?

Are we maximizing our sales potential?

Are we advertising in the right places?

How well are our salespeople performing?

Are our sales territories properly aligned?

Are we competitive, and where is that competition?

Are stores in the right locations?

Do we have a correct product mix?

Should we open new outlets?

¹ See p. 165.

To properly answer these questions, accurate and timely information are required. It is important to point out that census data are not the only information used to answer these. Everything from competitive data to the availability of resources is needed. The core data, or benchmarks must, however, always be derived from a Decennial Census.

Putting aside the funding issue for a moment, and assuming the Census Bureau will deliver what they say they will deliver, then the major issue that faces the private sector is one of timeliness. Although we believe the Bureau did an excellent technical job in 1980, there were delivery problems. Not only were some of the data delivered later than similar data delivered after the 1970 Census; the Bureau had problems meeting their own published schedules.

Now the question is what is the scenario for the 1990s. As of now, we do not as yet have a schedule. If this is because the Bureau is still not sure what they will produce even after they have told us what they are planning to produce, then we have to worry. If, on the other hand, they are simply waiting to ensure that they are confident they can meet whatever delivery schedules they make available to us, then that is fine.

The former possibility—namely, not being sure of what they will be disseminating—leads to the issue of funding. If the Census Bureau does not have adequate funding for the 1990 Census effort, there is the possibility that they will not deliver all the products which they have planned for. Indeed, this is exactly what happened after the 1980 Census. When the Bureau in 1981 notified the public that they were not going to release sample data at the ZIP Code level. The reason for this decision was that there were budget problems. It was also apparent that since they had the perception that these data were basically for private sector use, if something were to be cut, this would be the best approach.

As it turned out, there were also outcries from the public sector and the academic community, as there was from the private sector, over the loss of ZIP Code information.

Eventually, the file was produced through the creation of a consortium of 17 organizations, both public and private. These organizations paid the Bureau \$250,000 to create a special file, and the Bureau gave the consortium essentially an 18-month period of exclusive use. In other words, the Bureau would not sell the file themselves for this period of time.

The Bureau in a news release in March 1982 announced, "Private industry solves Census Bureau data problem." Although this sounds like good cooperation between the Bureau and the private sector—and indeed, it was—this is a very poor precedent. These data are needed by all sectors of our society. Although those who purchased the file did not then turn around and gouge—although we like to believe we did not gouge—those who needed to purchase the data, the cost asked for by the private sector firms were prohibitive, certainly, to some potential users.

One example is the unaffiliated user, for example, the academic researcher who wants to get the data from the university system for basic research needs. A cost, let's say, of \$350 for a tabulation might not be a large charge for a corporation, but for an academic

researcher where his or her budget is \$350, that is a huge amount of money.

In all my conversations with those who were part of the consortium, no one was happy about this, even though we all knew we were going to make a lot of money. Essentially, we were all going to make a lot of money anyway. This file should have been public from the beginning, just as was planned, and no one wants the situation to be repeated.

Unfortunately, I believe we may be headed toward a repeat of the 1980 experience. According to the newsletter of the Association of Public Data Users, the Census Bureau reported at the House Subcommittee on Census and Population, "The Census Bureau mentioned a plan to save \$5 million. It will not provide corrections to TIGER maps after the census is taken. The Bureau feels it is not in its mandate to create new data products and that a revised TIGER file would be just that."

I in no way denigrate the idea of saving \$5 million, even if the range of difference between GAO and the Bureau is \$400 million. But we are already seeing a cutback on products even before the census is taken. Further, this series of corrections is not only an important product in its own right, for the private and the public sectors; the corrected TIGER file is at the heart of planning future decennial censuses along with linking establishment files for the economic censuses.

I hope we are not seeing the first steps in the reduction of what was a geographic information system into nothing more than a simple file which makes nice maps. It would be a very poor decision to eliminate these corrections.

On the issue of policy, just one example, if I might. In 1980 there was a lot of controversy regarding whether the Bureau of the Census would distribute software with the data products. The major issue was one of unfair competition with the private sector, since the Bureau only recovers its cost of dissemination. And please, do not get me wrong; I certainly would not want to change things and perhaps end up with the Canadian system, where they have to recapture all of their costs.

However, the software issue will become even more sensitive in the 1990s, once data are disseminated on laser disks more commonly known as CD-ROM.

Many, although not all, argue that without some basic software, these disks are not very useful. This is only one example of the kinds of issues which must be resolved shortly, given the fact that the Bureau plans to release much of the 1990 Census on these CD-ROM disks.

What I believe is required is for the Office of Management and Budget, through some combination of A3, A76 and A130, to deal with the problem of what is meant by "electronic dissemination".

In conclusion, just as Sisyphus must roll the rock up the hill over and over again for all eternity, we also seem to have the eternal need to fight the same battle with regard to dissemination. On March 12th of 1982, I testified before the House Subcommittee on Census and Population, the topic being the impact of budget cuts on Federal statistical programs. At that time, we were reviewing the post-census problems associated with funding versus the need

for adequate and timely information, and I discussed the problems associated with the potential lack of information due to cutbacks. We are now essentially reviewing the same issue—fortunately, before the census is taken.

I hope that in all these years, we have not failed to convince those responsible for the allocation of funds in the critical importance of timely, accurate and detailed Federal statistical information. One thing is for sure—the private sector cannot adequately collect or disseminate it.

I urge those responsible for allocating funds that they ensure that the Census Bureau have the necessary resources to disseminate the information which we need from a decennial census. If we spend the money to collect the data and not ensure that these data are disseminated, then we are moving backward toward those countries mentioned at the beginning of my statement.

Thank you, sir.

Senator BINGAMAN. Thank you very much.

Mr. Young, I will ask you a question first. You indicated that our ability to project the changes in apportionment is fairly poor, and you indicated similarities to our ability to project the stock market or the weather.

There is a difference, though, it seems to me. Our inability to project where the 1990 Census will leave us as far as apportionment is concerned, is an indictment of our interim activities, as I see it. It seems to make a pretty strong case that we really just gear this thing up once every ten years, and then we lose it, and then we have to come back ten years later and try again to get back on track.

Is that basically your view of the issue, and if so, is it adequate at this stage, for us to just sort of lose it for ten years and then try to find it again?

Mr. YOUNG. I think you have pointed to a problem. If we only forecast the stock market once every 10 years, you can imagine the results. Yes, the problem with forecasting is this. One has—

Senator BINGAMAN. The point I am trying to make is, the stock market is a forecast of what it is going to be down the road. When we forecast today what the census will be next year, in contrast to the stock market, we are not forecasting changes between now and then; we are forecasting what we think has happened over the last 8 or 9 years, as well as a little bit of change between now and then.

Mr. YOUNG. Well, that's the point I want to address, though. The fact is that a meaningful trend cannot really be estimated without, say, looking at data that maybe spans a couple of years. It takes some time between when that data is collected and when you make the estimation. So actually, the trends that we are talking about on which the census forecast is built are probably 3 or 4 years out-of-date at this very moment. That is just the nature of the process.

In other words, we are talking about trends in the early to mid-eighties—that is what we have a reading on now—to make forecasts about 1990.

I think that if one had more frequent and more extensive interim surveys and updating, it is conceivable that one could improve our ability to forecast. I do not dispute that.

I am simply pointing out, however, that even if one were to spend quite a lot more money extending the frequency, the coverage and so forth of these intercensal exercises, there would still be a fair amount of uncertainty just because of the lag problem.

The data that I rely on now to forecast 1990 is going to be a reading of, say, what happened between 1985 and 1987, even under the best of circumstances. This is part of the problem, and it is almost unavoidable.

I would go on to say that if the object is to improve interim—that is, intercensal—coverage to an extent where we feel that we can pinpoint what the apportionment in 1990 is going to be, the amount of resources that one would have to spend would be prohibitive.

Senator BINGAMAN. In my home State there have been lawsuits, as I am sure there have been all around the country. These suits are intended to establish the rights of individuals, to provide constitutionally that minorities have adequate representation on various of the local boards and commissions. This even includes boards and country commissions.

It would seem to me that that puts a tremendous additional burden on the census information that comes out, because it will undoubtedly be the basis upon which not only is the State legislature going to reapportion, but I presume you are going to see a redrawing of those districts when the 1990 Census is done.

Is that something that you have looked at, or has anybody else looked at that issue as to what effect it will have on the accuracy of the information we need to obtain at the local level?

Mr. YOUNG. Well, I think that the need for fair representation at the local level is one of the most telling arguments in favor of more frequent and more extensive surveys between official censuses. This is partly an outgrowth, as you point out, of greater sensitivity on the part of the courts to a precise definition of the one person, one vote standard. That is going to drive a lot of these quests for accuracy.

I would furthermore agree with you that it is harder in some cases, especially in urban areas, to achieve the required degree of accuracy with some of our current methodologies. There are some areas of New York City, as I am sure you are aware, where estimates of the proportions of different sectors of the population, the size of the population itself, and what size the Bronx bears relative to Staten Island—are surrounded by a huge amount of uncertainty.

In that respect, I do agree with you that probably greater accuracy, which means more money, and more expenditures on new research methods, is probably required.

Senator BINGAMAN. Mr. Stoto, I gather what you are saying and from previous testimony, the Census Bureau has made a determination not to go forward with an adjustment after the 1990 Census; is that right?

Mr. STOTO. I think that is right, Senator.

Senator BINGAMAN. Is that a publicly-announced policy?

Mr. STOTO. The Department of Commerce has made that announcement. The reason I hesitate is that it is not quite clear at what level that decision was made.

Senator BINGAMAN. But you are saying that if the Bureau of Census loses the litigation they are involved in, they could well be ordered to make that adjustment; and if they were ordered to make that adjustment, your concern is that this post-enumeration survey they are now contemplating may not be adequate to let them do a proper adjustment. Is that what you are saying?

Mr. STOTO. Yes, sir.

Senator BINGAMAN. Their position is that they'll take the chance, I guess.

Mr. STOTO. That is exactly their position, sir.

Senator BINGAMAN. Okay. I don't know the timing on any of this litigation, but if they were to go forward as planned, and after the census is completed, find out that they needed to do an adjustment, what is involved then in trying to go back and get the thing done properly?

Mr. STOTO. Well, they are currently planning to do a post-enumeration survey, so the mechanism is in place to do an adjustment.

Senator BINGAMAN. That is 150,000 households. And you don't think that is adequate—or you just don't know?

Mr. STOTO. Well, it is hard to say what is accurate, and the answer depends on how much accuracy you need. If the job were to estimate the undercount at the national level or even for most of the States, I don't think there would be any complaint about the size. But the reason that the extra sample size would make a large difference has to do with this question that you were just discussing—having to make estimates for the very smallest geographical areas.

A sample size of 150,000 households nationally is very large, but when you start to think about how many people live in a particular neighborhood, or even on a particular block, that 150,000 does not give you much precision.

The other thing, though, is there is more than just the sample size involved here. There are other sources of bias which the Bureau has made strenuous efforts to estimate through this post-enumeration survey and other programs. One of the key things is the timeliness of the overall coverage evaluation program.

One of the critical elements is doing a census and doing an independent survey and then matching up the individuals in the survey to the census to see whether or not they were counted in both places. That is a difficult thing to do, because people do not always use quite the same name and things like that; people move. The further the distance in time between the census and the survey, the harder that is to do. They have follow-up activities where they go back and try to resolve some of the cases that they cannot resolve on paper; the further they are delayed in time, the harder it is to do the job well.

So in addition to the sample size, I think an equally important concern is the priority that the Bureau will give to carrying out the operations and getting them done in a timely fashion so that they are done well.

Senator BINGAMAN. Again, any of you who would like to respond on this. Mr. Stoto, you indicated you are on two advisory panels to the Census Bureau, and there is a third one that you are not on?

Mr. STOTO. That's right—there are quite a number of them, but there is another one that deals with similar issues that I am not a member of.

Senator BINGAMAN. The GAO has made the point that they think we need to do some fundamental revision in the way we approach the whole census subject before we get geared up for the 2000 Census. Are your advisory panels taking that job on? Are you recommending some fundamental changes that need to be pursued on this, or do you see that as your mandate?

Mr. STOTO. Well, at the last two meetings, maybe three, of the American Statistical Association Advisory Committee, there was a discussion about planning for the 21st Century. This is an activity that the Bureau has been doing for a couple of years. They have begun to develop some very interesting proposals that we discussed, and we in general endorsed. Our main point was that these are good ideas for this stage and let's make sure that we follow them through.

I would like to second what Mr. Dodaro said, though, about the need for testing out some of these ideas in the 1990 Census.

Senator BINGAMAN. What are some of these ideas? This is pretty vague? They came up with some general ideas, you endorsed them—

Mr. STOTO. One particular idea was to spread out the census-taking work over a decade. At the core of it would be to hold a decennial census that met the requirements of the Constitution and little else. That means basically counting people and their age and race and sex, and where they live, of course, and then to enlarge the activities that are carried out at other times in the decade. For instance, I think they are considering doing a very large-scale sample survey in the years that end in "5" to give some of the detailed information that is used for Federal programs and so on and in addition to that, a series of very large-scale surveys of States done on a rotating basis so that there is more uniform coverage. That addresses some of the timeliness issues, and it may be a way to get better quality information for no more money.

It is a complicated job. There are a lot of things that need to be looked into. One thing that could be experimented with is what difference would it make in the coverage if in fact people had a very short census form as compared to a long census form. That's the kind of thing that could be investigated and needs to be investigated at census time.

Senator BINGAMAN. Mr. Spar?

Mr. SPAR. Senator, also as a member of the ASA Advisory Committee to the Census Bureau, there are timeliness issues there, because were the Census Bureau to move toward this 21st Century approach, in order to make sure that you had detailed information at the small level beyond just the basic Constitutionally-required information, you would have to have a census go into place by 1995, because if you did not, you then would not have updated information until the year 2005, leaving us with a 15-year gap.

So the 21st Century plans, I think, should be treated as something much more than just an academic exercise. There are timely issues that have to be faced by the Bureau, and I agree with what

both gentlemen have said here, that these issues have to be faced immediately for this to be a success.

Senator BINGAMAN. Do we do the census and data collection that is involved in the census, as well as our major allies, the Europeans, the Japanese—are we ahead or behind them; are we still in the Model-A Ford, and they are in a bullet train? What is the situation?

Mr. SPAR. Well, I would like to respond if I might from the dissemination point of view. From the collection point of view, some are ahead, obviously, some are way behind. I was visited just in the last year by the British, Japanese, French, and next month, the Australian census bureaus in terms of how we use our data, how we disseminate our data, how we make marketing plans as a function of it. I think in that area, in that arena, we are way ahead. But that is not going to last for a long time.

They understand—and there is an irony here—they understand the need for accurate and timely dissemination to the point that if you were to ask me 10 years ago who my clients were, I would say to you Coca-Cola, Levi Strauss—American companies—they might have overseas operations, but American companies. If you asked me that question today, I would just as readily say Mitsubishi and Isuzu. So it is a global world. We no longer deal on just a company basis to a country. It is all intermeshed.

Senator BINGAMAN. I have one final question for Mr. Spar. You expressed concern about the issue of significant work, like the sample data on the ZIP Code level, having to be paid for by the private sector and then the information obtained being provided to only those firms that pay for it on an exclusive basis for 18 months. How do you suggest we deal with that? Should we prohibit it?

Mr. SPAR. No. I think it is very simple. I think it is just necessary to make sure that these data are disseminated in the Decennial Census, as I stated in the testimony. We should not set up a situation for exclusive use. I think it is necessary to understand that we have this mixed economy, and oh, there is a private sector, let's set up a situation with them, and we'll worry about the public sector here—there are no clear boundaries.

Senator BINGAMAN. But if we don't prohibit it, how do we persuade the Census Bureau that they need to request the funds to pursue that as part of their regular mandate? If they were to announce that they were out of funds this next time and needed to do the very same thing with the same 17 companies, what is our response to be on that?

Mr. SPAR. Well, I know that I'd be trying to come back here to say to you, Senator, please ensure that the Census Bureau has the adequate funds, because otherwise they will cut it out again.

Senator BINGAMAN. But I gather their point of view would be we had adequate funds to do a proper census; we have not done anything in 1990 we did not do in 1980 as far as making the general information available to the general public, and this is an add-on, and therefore it is not something that the taxpayer should have to pay for. So there is a philosophical difference there between their position and your position, as I understand.

Mr. SPAR. I think the key phrase is what you just used, Senator, which is "add-on." We don't see it as an add-on, and indeed the

Census Bureau right now does not see it as an add-on, because in their present dissemination plans, they are including ZIP Code information, for example, in that plan. It is called the 3(b) file. So the Bureau themselves, philosophically, have stated that they see it as part of the integrated census dissemination program.

What I fear is that if they have a shortfall, they will turn around and say, well, we're going to have to cut something—oh, that over there, that might be private sector, or more geared to the private sector—let them pay for it separately. But it is just not a clearcut issue. It is not just the private sector. It turns out everybody uses this data; everybody uses and needs the information.

Senator BINGAMAN. Is there any reason why, if the European Economic Community determined that they needed this information, if they came in and said last time it was 17 American companies, and this time it is us, and we want this, and we want it exclusively for the next 18 months—is there any reason why the Bureau would not enter into that agreement?

Mr. SPAR. That is a fascinating question. I wonder if that is legal? I guess I don't really know if they can legally do that. But under the assumption that they could, it wouldn't surprise me if they did, only because just watching the way the EEC is moving, from a forecasting point of view it is fairly easy to forecast. They are going to have an international forecast there. In other words, there will be some census that will be broad-based. They are working toward this already within their own community.

Senator BINGAMAN. And you indicate that your clients and Mitsubishi and Isuzu—what if we had 17 Japanese companies saying our biggest market is the United States, and we need this information, and we want it on an exclusive basis for the next 18 months.

Mr. SPAR. I have no doubt, Senator, that Congress would step in very quickly and not allow something like that to happen—or at least, I'd like to hope so.

Senator BINGAMAN. Congress does not move very quickly. I think those are issues that need to be thought of if we are in the business of giving people exclusive rights to information that was gathered as part of the U.S. Census.

Mr. SPAR. I agree with you, sir. I don't think the concept of exclusive rights makes much sense. The reason that was put in was that the feeling was if you pay for the data specially, you should have a window, if you will, of opportunity to recover your costs. That was the background behind that, and that makes some sense. But you don't need large windows, and that can easily be controlled.

Senator BINGAMAN. All right. We have about run out of time. I appreciate very much the testimony. We might have some additional questions we will submit in writing for response, if you could help us with that. We appreciate your attendance, and we hope to follow up on some of these suggestions.

The Subcommittee is adjourned.

[Whereupon, at 12:30 p.m., the Subcommittee was adjourned.]

APPENDIX

UNITED STATES DEPARTMENT OF
COMMERCE

WASHINGTON, D.C. 20230

BUREAU OF
THE
CENSUS

THE STATUS OF PLANS FOR THE 1990
CENSUS OF POPULATION AND HOUSING

C. LOUIS KINCANNON
DEPUTY DIRECTOR, BUREAU OF THE CENSUS

UNITED STATES SENATE
COMMITTEE ON GOVERNMENTAL AFFAIRS
SUBCOMMITTEE ON FEDERAL SERVICES, POST OFFICE,
AND CIVIL SERVICE

May 5, 1989
Washington, D.C.

(45)

INTRODUCTION

Mr. Chairman, I will report to you today on the status of plans for the 1990 census and on the specific issues you raised in your letter of invitation.

Census Day for the 1990 census--the Bicentennial Census--is April 1, 1990, 331 days from now. The census, which has been taken every 10 years since 1790, is mandated by Article 1, section 2 of the Constitution. The Constitution requires a census as the means for determining how many representatives each state shall have in the House of Representatives.

The census is a massive and complex undertaking that will involve the enumeration and collection of characteristics for about 250 million people and 106 million housing units in the United States, and for an additional 3.6 million people and 1.2 million housing units in Puerto Rico and the Outlying Areas.

Our goal is to count every resident, regardless of where they live: whether in a single-family home, an apartment, a condominium, a group quarters--such as a college dormitory or nursing home--or in a shelter for homeless persons or a street location where homeless persons sleep at night. We have devised procedures to cover each of these living arrangements, as well as to assure good census coverage in different parts of the country--urban areas, suburbs and small towns, rural areas, sparsely populated and remote areas, and so on.

The census is also one of the most important activities of the Federal Government. Political representation and money are allocated based on census results, and the data are used for planning at every level of government and in the private sector. By law, we must submit state population counts for apportionment purposes to the President by December 31, 1990 and counts for use in drawing legislative district lines to the states by April 1, 1991.

I will discuss four topics today--(1) planned improvements in the counts for the 1990 census, (2) the quality of the data, (3) the budget, recruitment, and automation, and (4) the progress of major preparatory activities.

PLANNED IMPROVEMENTS IN THE COUNTS FOR THE 1990 CENSUS

First--planned improvements in the counts for the 1990 census.

Because the census is so important in terms of allocating political representation and money, there is great concern both inside and outside the Census Bureau about the accuracy of the census data. We have taken a number of steps to improve the efficiency and accuracy of the 1990 census. We are concentrating our energy, attention, and resources on these efforts to make the census better. We expect these steps to produce a very complete count. The improvements we plan to implement for the 1990 census fall into eight categories, and I will touch on them briefly.

Planning

We began major testing earlier for 1990 than for 1980 (1984 vs 1976) and have conducted more major tests than for previous decennial censuses (7 for 1990 vs 5 for 1980). We conducted this extensive testing to gather evidence on the utility of new procedures and techniques. The testing also allowed new procedures and techniques to be refined and modified.

Promotion and Outreach

In the area of promotion and outreach, we are making great strides. Our efforts will include public service advertising, public information, and working with national and community organizations, religious organizations, schools, private companies, and state and local governments. For the first time in any census, the Advertising Council has obtained the volunteer services of five ad agencies. These are the Mingo Group, which is producing ads for the Black population; Castor Spanish International, for Hispanics; Muse Cordero Chen, Inc., for Asians and Pacific Islanders; and West Indies and Grey, for Puerto Rico. The Ad Council recruited Ogilvy & Mather to design the general-audience campaign. We also established an information service to engage the news and feature media, both general and specialized, in providing public information and in responding to questions.

In addition, we have entered into an interagency agreement with the Institute of American Indian Art to develop an effective promotional campaign to urge American Indians and Alaska Natives to participate in the census.

We have involved educational officials and consultants in planning the census education project materials, which we sent to over 120,000 elementary and secondary schools nationwide this March. The materials are in the schools 10 months earlier than for 1980 so that the schools can work them into their curricula. We have expanded our religious organizations project and already have major initiatives underway with the Catholic U.S. Conference of Bishops and the Congress of National Black Churches, and other denominations and fraternal orders not represented by these two groups.

We also brought on earlier than for the 1980 census the professional staff for outreach to community organizations and local minority media outlets. About 270 of these specialists are establishing contacts with grass roots organizations and local media.

Working through national organizations is another key part of our promotion campaign. New for 1990 is an effort to formalize the active participation of national organizations in carrying the census message in the 1990 census. So far, about 90 organizations have offered their support.

Joint Participation Between Census Bureau and Local Officials

We are encouraging more joint participation between ourselves and localities. The 1990 census is more than just a Federal activity. It is a national ceremony and its success depends on all of us working and pulling together.

We have made improvements in the local review program, which gives the over 39,000 local officials an opportunity to review counts while we can still take corrective action if a problem is found. One of these improvements is to offer training to local officials on how to participate in the program. The first round of training has been completed, and a second round will begin in June.

We are meeting with mayors of major cities to discuss mutual concerns about the 1990 census and possible joint efforts to assure as complete a count as possible of the cities' populations in 1990. We are holding a series of regional meetings with mayors, other city officials, city planners, and county officials to encourage their support for the 1990 census. We have mailed a handbook on how to mobilize local census participation to all 39,000 governmental jurisdictions.

We also have established a new American Indian Tribal and Alaska Native Village Liaison Program to improve the participation of American Indians and Alaska Natives in the 1990 census. The liaisons will carry out a variety of functions related to outreach and recruitment.

Efforts to Encourage a High Mail-Return Rate

We have built into the census process several new ways to increase the mail-return rate. These include "reminder" postcards that we will mail to housing units in mail-out/mail-back census areas 2 days before Census Day; motivational inserts in the questionnaire mailing packages that list reasons

to be counted in the census; and, in areas where we anticipate language difficulties, a multilingual motivational flyer in English, Spanish, and selected Asian languages. We also are expanding our questionnaire assistance efforts. For the first time, we will set up toll-free lines that are exclusively for persons who speak Spanish or Asian languages. These will be in addition to the English-language general toll-free numbers. We also will again provide questionnaires in Spanish to those who request them, and enumerators will carry translations of the questionnaire instructions in several languages.

Improvements in Census Procedures

We are improving address list compilation and questionnaire delivery procedures. We are introducing new procedures or improving 1980 procedures to make sure that the census address list--and, thus, the coverage of housing units in the census--is as complete as possible. This includes new listing procedures that will yield better apartment designations in multiunit structures in urban areas. We also are introducing new procedures to increase the likelihood that a household receives its census questionnaire. This includes direct delivery of questionnaires by census enumerators in some rural and special-housing areas in the South and Midwest and in large public housing complexes in several large cities. These are areas where we have experienced problems with questionnaire delivery in past censuses.

Enumerator Training, Pay, and Management

We are strengthening enumerator training, pay, and management. Enumerator training will be more interesting and relevant to the job. It will include learn-by-doing exercises and more training on map-reading, which has been a problem in the past. Supplemental pay will be given to enumerators who are productive, do good work, and complete their assignments on schedule. We plan to tighten supervision and require that the crew leaders review the enumerators' work daily.

Automation Advances

We plan several important automation advances for the 1990 census that will move the census out of the paper-and-pencil world into the computer era. We will convert questionnaires to machine-readable form at least 3 months earlier than for 1980, which should make it possible to get data products out sooner. A new automated address control file will contain every address we compile prior to the census. This automated file will allow us to check in questionnaires using high-speed laser sorters and minicomputers, instead of by hand, as in 1980. An automated management information system will track work progress and costs. And we will place about 520 minicomputers in our regional census centers, district offices, and processing centers. The increased automation in the 1990 census will help us better control the whole census process, give us more and timelier status information, and allow more time for review and correction of any problems.

Geography

One of our most far-reaching activities has been the development and implementation of an automated geographic support system, called the Topologically Integrated Geographic Encoding and Referencing, or TIGER, System. This system contains geographic information that allows us to produce maps quickly and in a format best suited to their planned use. It solves one of our major problems with the 1980 census--the creation of geographic products in independent operations that led to errors and inconsistencies in the procedures. It means better maps and consistency of geographic information in multiple files. The TIGER System produced all the maps for our address compilation operations, as well as the maps used by local officials to verify boundaries we plan to use in tabulating data for their area. The U.S. Geological Survey aided us in our efforts to make the TIGER System a reality in only 6 years, much sooner than if we had worked alone. This is an outstanding example of interagency cooperation.

We tested this system successfully in the dress rehearsal, and in addition to producing the maps described above, we have used it to assign the correct geographic codes to the addresses we purchased. We are now using the TIGER System to produce the maps for the first phase of the local officials' review of census counts. We expect that the TIGER System will have many additional uses and users both now and in the future.

We also have increased the participation of the states, local governments, American Indian tribes, Alaska Natives, and officials in Puerto Rico, the U.S. Virgin Islands, and the Pacific Outlying Areas in delineating the boundaries of the geographic areas for which we tabulate data. This will help assure that the data tabulated for all geographic areas in the 1990 census are accurate and useful.

QUALITY OF THE DATA

Second--the quality of census data.

While we are including new programs in the census process to improve the accuracy of the census counts, we are also concerned about assuring high quality for census data in general. Many factors can affect the quality of census data. These include the public's ability to understand the census questions and to fill the questionnaire properly; the ability of enumerators to follow instructions and carry out operations as planned; the processing of questionnaires in preparation for tabulating the data; and the review of census counts by local officials.

If we are going to get accurate answers to the census questions, the public must understand them. We conducted several tests to determine the best way to word census questions and design the census questionnaire so that respondents will clearly understand the intent of the questions asked. The major test we conducted was the 1986 National Content Test, a split-panel test of various wordings and formats of selected questions. We expect that some respondents

will need help in completing their census questionnaires. We plan to set up community walk-in centers where they can receive assistance and we will print a toll-free telephone assistance number on the questionnaires. As I mentioned earlier, we plan to set up toll-free assistance numbers for persons who need Spanish or Asian language assistance in filling their questionnaires. We provide other language assistance, too, by hiring bilingual enumerators and providing translations of the questionnaire instructions.

Enumerators are another key in the process of getting high-quality census data. We have made significant improvements in our enumerator training for 1990, including simplifying and streamlining the training guides and materials and building in more learn-by-doing exercises. We also have strengthened supervision, including requiring more frequent contacts between the enumerators and their supervisors.

Census questionnaire processing is being improved greatly by the introduction of automation to replace large-scale, error-prone clerical operations. For large areas of the country, respondents will return questionnaires directly to a processing center where the questionnaires will be edited for completeness by computer. If additional information is needed from the respondent, we will telephone them to get the additional information or conduct personal visits, as necessary. We have also automated the process of assigning computer-readable codes to the answers for questions where the answer is to be written in rather than filling pre-coded circles. We expect this to speed the coding process, reduce the need for clerical workers, and improve accuracy.

Census data quality also can be improved by local official review of the census counts. We have enhanced this operation in several ways compared to 1980. In areas where we conduct the census by the mail-out/mail-back method, we will have two phases of review. The first is a review of housing unit counts from our precensus address list; local officials will have 45 days to review these counts. The second phase is a review of the actual preliminary census counts and every governmental jurisdiction in the country will be sent these counts and have 15 days to review them. In 1980, we had only the second phase of review, and officials were given 10 days to review the counts. Also new for 1990, we plan to issue the aggregate counts at the smallest geographic level--the census block. This way, local officials can better pinpoint where there are discrepancies between their records and the counts, and we can identify specific errors more accurately. Finally, as I mentioned above, we are providing training for local officials in how to participate in the local review of counts and how to make it as successful as possible.

BUDGET, RECRUITMENT, AND AUTOMATION

Third--the budget, recruitment, and automation.

Budget

We estimate that the 1990 census will cost about \$2.6 billion dollars. We believe that this total will be sufficient to take a good census. We are requesting about half of this total for fiscal year 1990, when we will mail

out or deliver questionnaires and conduct personal visits, complete the enumeration, and begin the processing and tabulation of census data.

We are constantly examining and refining the census design so that realistically it can be carried out within currently approved budget levels. While staying within our budget targets, we will strive to preserve our objective of maintaining a high level of quality.

Factors outside our control, such as lower-than-expected mail-return rates or lower-than-expected productivity, could increase the costs, but we do not expect that to happen. If one of these occurs, we will inform this Subcommittee promptly. We will have to make decisions rather quickly based on the precise nature, magnitude, and timing of the problem and other factors at the time. We now have in place a tool that will help us do this--the automated management information system (MIS)--new for 1990. The automated MIS will give us up-to-date cost and progress information so that we can monitor critical census activities on a daily or weekly basis. We have in place now a decision-making process that will lead to a resolution of problems. This process involves working meetings of key headquarters staff involved in planning and implementing the census, executive staff review at the Census Bureau, and departmental and budgetary review. This process will be guided by the principle of preserving census timing, quality, and accuracy. As I mentioned earlier, we have mandatory deadlines we must meet for the release of apportionment and redistricting data. We also have as major goals in the census to maintain a high rate of overall coverage, improve the

accuracy of small area data, and reduce the undercount differential for population groups and geographic areas. These deadlines and goals will guide us in making any necessary decisions to deal with problems in 1990.

Recruitment

We will need to hire 480,000 persons during the period October 1989 to September 1990, with about 315,000 actually working at the peak of operations (April-June, 1990). This includes staff in our regional census centers, district offices, and processing centers, which I will discuss later. Hiring this army of workers will be a challenge, as it has been in recent censuses.

Over the last 4 years, all through our testing cycle, we have been addressing this vital issue of how to recruit, pay, train, and manage our workers. We have implemented innovations in our tests and are confident these will help us recruit and retain good workers, as well as make the census better.

Still, during our 1988 prelist, an address-list compilation operation, we learned that our base pay rates of \$5.50-\$6.00 an hour were not competitive in some areas. Prelist was our first large-scale, national census operation and required some 35,000 workers.

Toward the end of prelist, we found we had to increase the pay rate in selected areas where we were having difficulty hiring. At the time we instituted the pay increase, we developed a test to evaluate the effectiveness of the pay increase relative to the original pay rates.

We analyzed its effect on productivity and have developed a scheme for setting several different rates for district offices based on a range of factors including unemployment rates, demographic and economic variables, and so on. We think we have a sound plan for setting differential pay rates.

A separate issue is supplemental pay for the temporary field staff. The purpose of supplemental pay is to increase enumerator productivity, reduce turnover, and help us meet our goal of a quality census. Supplemental payments are based on the amount of quality work completed within a designated time period. Previous tests and field experiences lead us to believe they are a valuable tool. There are no explicit costs involved; it involves a redistribution of basic pay. We plan to use supplemental pay in 1990, but we may modify our plan based on the analysis of the 1988 dress rehearsal experience, which is not completed yet.

Automation

I mentioned earlier some of the automation advances we are planning for the 1990 census. In 1987, we undertook and successfully completed the largest computer procurement in our history. In all, we will acquire 550 minicomputers (350 leased and 200 purchased), most of these for the decennial census and the rest for our economic and agricultural censuses and current surveys.

As we reported to this Subcommittee on June 17, 1988, while there were delays in completing this procurement, we were able to get back on schedule. After

delivery of the first minicomputers, we undertook accelerated development of software programs for the Dress Rehearsal and we established a special unit to install and test the hardware. This was done successfully. We are now in a favorable position for timely development of reliable 1990 systems. All software is being tested before 1990. This testing will involve quality assurance procedures at Headquarters and further testing by our special unit.

Thus far, we have been very pleased with the performance of all the hardware and the applications software written or converted for use on the equipment. There have been no significant difficulties that have prevented us from completing any activities.

PROGRESS OF MAJOR PREPARATORY ACTIVITIES

Fourth--progress of major preparatory activities.

We have begun major preparatory activities and I will provide updates on three of these--(1) address list compilation, (2) the census questionnaires, and (3) space for census operations.

Address List Compilation

One of the major preparatory activities for the 1990 census is the compilation of an address list that we will use to control the delivery and return of questionnaires in 1990. We plan to enumerate about 94 percent of the housing units by mail-back procedures. With these procedures, we compile an address

list in advance of the census, mail or deliver a questionnaire to each address, and follow up on those addresses for which questionnaires are not returned by mail. This way, we can complete most of the census by mail and concentrate our resources on the follow-up cases. The success of these procedures depends in large part on the compilation of an accurate address list before Census Day.

For the more urban areas of the country, we purchased about 56 million residential addresses from commercial vendors under contracts awarded in February 1988. We have assigned these addresses to the correct geographic location by computer, and by clerical research when the computer could not make the assignment.

In July 1988, we began the first phase of our "prelist" operation, which we completed in January 1989. In this operation, enumerators systematically canvassed and listed addresses for the suburban, small-town, and rural parts of the country, where lists either do not exist or cannot be assigned geographic codes by our computer files. The "prelist" will be conducted in two phases. In the first phase, we listed about 30 million addresses. The second phase, which we will conduct beginning this June, will list an estimated additional 11 million addresses.

Tests over the last 30 years show that updates by census enumerators and postal workers are required to produce a complete and accurate address mailing list for the census. Thus, we have contracted with the U.S. Postal Service (USPS) to conduct several checks of the lists for completeness and accuracy.

In addition, our staff will conduct checks. The first of the USPS checks--the advance post office check--was completed last fall for the addresses we purchased from commercial vendors. Mail carriers informed us of any addresses not on our list to which they deliver mail and added the addresses to our list. The carriers also corrected erroneous addresses and informed us if we gave them an address that did not exist or was not residential. The addresses we listed in "prelist" underwent the same type of advance post office check--one phase has been completed and the second phase is being conducted now. This summer, our enumerators will assign the correct geographic codes to addresses the USPS adds in the "prelist" advance post office check and obtain new mailing addresses for addresses the USPS tells us are "undeliverable."

Another check of the address list is the "precanvass" operation, an updating of the addresses in urban areas that we will conduct from the middle of this month through June. Our enumerators will systematically canvass their assigned areas to look for addresses not on our list and to make corrections to the list. We expect that, when we are through with all our address-compilation operations, the list will contain an address for virtually every housing unit and group facility in the areas where we will ask that questionnaires be returned by mail.

Mail carriers will deliver unaddressed questionnaires to housing units not in mail-back areas--primarily the more remote, sparsely populated areas of the country, containing about 6 percent of all housing units. Here we will ask householders to complete their questionnaires and hold them until an enumerator visits to pick them up. There is no precensus address list for

these areas; the enumerator lists each address and related information during his or her visit, completes a questionnaire if the respondent has not already done so, and collects long-form information at a sample of housing units.

Questionnaires

Questionnaire printing is one of our most important activities for the census. We cannot conduct the census without questionnaires.

The Government Printing Office (GPO) awarded a contract for producing approximately 86 million short-form questionnaire mailing packages at a cost of about \$18 million. This award represents the largest single product award ever made by GPO for printing and associated services. Each questionnaire mailing package will include outgoing and return envelopes, an addressed questionnaire, instructions for completing the questionnaire, and a motivational insert. A contract has also been awarded for printing the long-form questionnaire mailing packages.

The Government Printing Office (GPO) has awarded two additional contracts for the production of enumerator-administered short- and long-form questionnaires, and forms are being delivered to the Census Bureau under the first of these contracts. The enumerator-administered questionnaires will yield data identical to those from the regular mail-out questionnaires, but the questions are reworded to ease their reading and understandability during an interview. This is the first census that has had this type of questionnaire, which could

contribute to reducing enumerator-related errors. Work continues on other procurements for public-use forms and on preparing camera copies and film negatives for the printing contractors.

Space for Census Operations

In all, we will require 6 million square feet of space for temporary offices to manage 1990 census data collection and processing. These will include 13 regional census centers, 493 district offices (484 in the United States and 9 in Puerto Rico) that the regional census centers will manage, and 7 processing offices. The regional census centers and district offices are responsible for collecting the data. The processing offices prepare the census questionnaires and convert them to computer-readable format so that we can produce data products.

The regional census centers are located in close proximity to our 12 permanent regional offices, plus one in San Francisco. All 13 offices are occupied now. The district offices will open on a phased basis. For example, 109 of the offices have opened early to conduct address list updating operations, such as the prec canvass operation I mentioned earlier. The remainder of the district offices will open this Fall.

Four of the processing offices are open now--those in Kansas City, Missouri; Baltimore, Maryland; Jacksonville, Florida; and San Diego, California. We plan to open the other three later this year in Albany, New York; Austin, Texas; and Jeffersonville, Indiana.

CLOSING

Mr. Chairman, in closing, let me summarize where we stand as we approach the 1990 census: We have incorporated improvements in every aspect of census-taking. We believe these advances will lead to an improved count and to improved data quality overall for the 1990 census. We believe we have requested sufficient funding to take a good census, including implementing these improvements. We have made major advances in the area of automation making the 1990 census the most automated ever. And we have successfully completed some major preparatory activities and expect others to continue as planned.

Mr. Chairman, that concludes my testimony.

RESPONSES OF THE BUREAU OF THE CENSUS TO WRITTEN QUESTIONS

Question 1. When Congress needs access to information that you have collected, what instructions have you given to your staff so that they will cooperate by promptly and accurately providing the results of their work to us?

Answer. Over the years, we have received many requests for information from Members of Congress, often in the form of correspondence forwarded to us for response. We have a formal correspondence process for all such requests to ensure timely and thorough answers are provided. Other requests, received by phone or occasionally in person, are always given highest priority. We believe this process has worked very well, and are not aware of any problems or dissatisfaction with our responses.

Question 2. Does the Bureau of the Census or the Department of Commerce have any policies or directives to its staff that require the staff to submit information to political review before it is provided to Congress? If so, what limits are placed upon the service provided to Congress? How do these policies extend to the support agencies of Congress such as the General Accounting Office or the Congressional Research Service of the Library of Congress?

Answer. Most correspondence and other requests from Congress (including the GAO and CRS) that come directly to the Census Bureau are answered without Departmental involvement, although courtesy copies of the responses are sent to them. Requests referred to us by the Department usually are reviewed by them, and they and OMB review testimonies to be presented to our budget and program congressional committees.

Question 3. Does the Administration edit the information provided to Congress to insure that it will support the policies of the President or do you factually report the results of your research?

Answer. Program goals and other policy matters clearly are determined by the Administration. As to Census Bureau data itself, we have an exemplary and unimpeachable record regarding statistical standards that must be, and are, met in collecting, analyzing, and reporting data. We could not function successfully as a statistical agency if this were not both actually and perceptually the case.

Question 4. We have heard that there might in fact be a directive to the staff requiring them to refer all Congressional requests to the Bureau's Congressional Liaison office before answering their questions. Is this correct? What is the reason for this policy?

Answer. As part of our standard correspondence system, our Congressional Affairs Office receives courtesy copies of all incoming correspondence and the replies. Incoming phone calls are handled expeditiously by the recipient of the call, regardless of their role in the organization, and reported to CAO for information purposes. Clearly this office needs such information so as to provide the most effective liaison to the Congress.

Question 5. Have there been any cuts in the census outreach and promotion activities? I understand that the Census Bureau has a promotion office, essentially an in-house advertising agency. Has this office suffered any cuts?

Answer. The full-cycle (10 year) budget estimate of \$2.6 billion, including estimates for component programs such as outreach and promotion, was approved by the Administration and presented to the Congress in 1986. The funding for the outreach and promotion program has increased, not decreased, since that time. The same is true for the Census Promotion Office—overall funding has increased since 1986.

Question 6. What are the major factors that have contributed to the cost increases in the census?

Answer. Compared to the 1980 census, two large factors are inflation and the increased number of housing units to be enumerated. Factors that have contributed to the real increase in costs are due to program improvements to help overcome operational, quality, and timeliness problems that occurred in 1980. Additionally, these improvements allow us to respond to changes in the demographic characteristics of the work force and anticipated lower public cooperation in responding to the census. These improvements include automation advances (such as TIGER; the distributed network of minicomputers in nearly 500 offices; and the automated Management Information System); earlier planning and testing; earlier and increased outreach and promotion efforts; and various new/refined census procedures.

Question 7. Have you developed a schedule for the release and delivery of 1990 census products other than those specifically required to be produced under Public Law 94-171 and the provisions of titles 13 and 2 of the United States Code.

Answer. Attachment 1 is the most current schedule for the release of 1990 data products.

Question 8. What plans does the Census Bureau have for developing and releasing software that the public could use to access data in a CD-ROM format?

Answer. The Census Bureau has no plans to develop and formally release application software that the public could use in conjunction with data we release in a CD-ROM format. We will, of course, provide basic access information for these data products.

Question 9. I understand that you currently have a request into OMB for the approval of the forms and procedures that will be used during the so-called vacant/delete check. What is this procedure and why is it needed? In 1985, the National Academy of Sciences recommended that you explore using sampling for this procedure. The academy panel said that there was evidence that doing this procedure on a 100% basis might actually contribute to overcounts rather than removing undercounts. Have you done any tests to see whether sampling could improve the results from this procedure? According to the academy report when a sample was used in 1970, the vacancy check cost 21 cents for each person added. In 1980, when every vacant housing unit was rechecked it cost \$21 for every person added or 100 times the cost of the sampling procedure. In view of the budget problems that you apparently have, isn't this a likely place to look for saving some money?

Answer. The vacant/delete check is done to verify the occupancy status assigned by enumerators during visits to each housing unit on our address list which did not return a questionnaire by mail. Past tests and censuses have shown that a significant number of errors are made whereby occupied units are misclassified as vacant or deleted as "not living quarters". Without the recheck, the occupants of these units will be missed by the census.

After the 1970 census demonstrated that there was significant problem with miscalculations, we decided for the 1980 census that the extent of the problem was large enough that we should systematically verify the classifications for every block (that is, on a 100% basis). Part of the reason for this is that, while conducting the recheck on a sample basis might accurately "correct for" the misclassifications at higher levels of aggregation, it also might introduce substantial errors in counts produced for small local areas.

It is important to note that our 1980 evaluation results indicated that this program contributed to reducing the differential undercount of minorities. The evaluation results also did show that there were some operational problems such that, in some cases, duplicate enumerations resulted. However, we have tested and refined our procedures and training throughout the 1990 test cycle, and believe we have solved these problems.

For these reasons, we believe we need to conduct this recheck on a 100% basis for 1990. Thus, we did not conduct tests of doing it on a sample basis. If current budget requests are approved, we believe we have sufficient funds to conduct this program as planned.

Question 10. Why is the response rate expected to drop from 83% in 1980 to only 78% in 1990? What can be done to improve the response rate?

Answer. We have seen significantly lower response rates in our test censuses this decade compared to those before the 1980 census. While it is difficult to generalize these results to response rates under actual census conditions, we estimate the rate will be about 5 percentage points lower in 1990. Many things can improve response rates, but outreach and publicity efforts probably are the most critical in convincing respondents that it is both important and safe to participate. We have increased efforts significantly in these areas since 1980, particularly for minority populations. Besides increasing publicity efforts, we will use an advance mailing in various languages to selected areas, and reminder cards in the entire mail-back area to encourage response. Outreach efforts also will include programs directed toward local participation by political and other community leaders. Without these efforts, the response rate might fall even lower than 78%.

Question 11. When you receive comments from the cities and towns, how will you decide which ones are a serious enough problem to require a recanvass of the areas in doubt?

Answer. All properly documented discrepancies are eligible for recanvass. Blocks with problems will be ranked by the magnitude of the discrepancy within each governmental unit. Initially, up to three percent of the total number of units within the district office area (during Precensus Local Review) or two percent of the total number of housing units within the governmental unit (during Postcensus Local Review) will be recanvassed. If additional funding and time are available, we may increase these percentages based on the size and number of problems reported.

Question 12. Will every documented case of a difference between local counts and the Bureau's count of housing units result in sending enumerators to reconcile the problem?

Answer. In some cases the discrepancies can be resolved by reviewing materials within the district office. Of those that need field recanvass, it is possible that we will not be able to reconcile all discrepancies (see previous answer).

Question 13. If you find resources are not adequate to recanvass all of the areas where cities and towns have found problems, what procedure will you follow?

Answer. The procedures outlined above should, at minimum, allow us to resolve the largest discrepancies for each governmental unit. For smaller problems, if no additional resources are available, the census counts must be considered final as is. However, in our test and dress rehearsals, our procedures and resources have been adequate to resolve all significant discrepancies.

Question 14. Does this local review extend to TIGER maps? We have heard complaints that the initial sample maps have many mistakes that could cause confusion during the census and, if not corrected, might make it difficult to use the results of the census. Specifically, New York City found numerous errors. What plans do you have to update the maps to correct errors before the Census is taken?

Answer. During Precensus Local Review recanvass, enumerators will annotate their maps whenever they find mistakes. These annotated maps will be available to other enumerators for later operations. Our current plan is to update the TIGER file for any errors in legally-established boundaries (such as for cities, townships, and American Indian Reservations) and any other errors noted in precensus operations that are critical to assuring a complete and accurate census. A small number of such errors were found in a review of the New York City maps.

Question 15. Would the adoption of a bill to allow federal and military retirees to work in the census without having to suffer a reduction of their retirement benefits be helpful to the census?

Answer. We support the bill introduced by Rep. Sawyer and believe it would be helpful to our recruiting efforts.

Question 16. What other legislation is needed to help you recruit and retain temporary census workers for the 1990 census?

Answer. At this time, we are not proposing any legislation in this area. We believe our recruiting and pay plans will be sufficient to attract the number of qualified applicants we will need.

We are working on the development of a differential rate plan and will make the plan available to the committee when it is finished. This plan will be accomplished within the requested 1990 funding level; that is, it will not add to the current cost of the census.

Question 17. I understand that the Bureau has a plan for differential pay rates in some areas of the country to overcome the problems of not attracting enough workers. Could you describe this plan? How much will this plan add to the cost of the census?

Answer. We are working on the development of a differential rate plan and will make the plan available to the committee when it is finished. This plan will be accomplished within the requested 1990 funding level; that is, it will not add to the current cost of the census.

Question 18. What are your plans for evaluating the results of the census?

Answer. Attachment 2 is a summary of our Research, Evaluation, and Experimental program plans.

Question 19. If the cost of conducting the census is greater than planned, will you nevertheless conduct a complete evaluation of the census?

Answer. In the event of budgetary short-falls in 1990, the precise actions we take will depend on the nature, magnitude, and timing of the problem. Since the legal mandates for the census require us to provide reapportionment data by December 31, 1990 and redistricting data by April 1, 1991, we would endeavour to preserve schedules and resources needed to meet these requirements. However, we are committed to evaluating the coverage of the census using demographic analysis and a Post Enumeration Survey.

Question 20. I understand that in October of 1987 the Administration decided to stop work on preparations to adjust the census for undercounts. If the courts order the Census Bureau to adjust the counts, will you be able to comply with those orders? Is a post-enumeration survey of 150,000 households of adequate size to conduct an adjustment, should it be ordered?

Answer. If the court orders us to adjust the census counts for coverage errors, we will comply with the order. While the size of the PES sample does affect the statisti-

cal reliability of PES estimates, the ability to adjust census counts depends much more on a host of other technical and operational capabilities.

Question 21. When does the Bureau need to have a decision on whether an adjustment is necessary in order for you to carry it out?

Answer. Any change of this magnitude to our current plans would need to be made no later than August of this year.

Question 22. If ordered to conduct an adjustment later this summer will you be able to carry out an adjustment in order to meet the December 31, 1990 and April 1, 1991 deadlines for furnishing apportionment and redistricting data?

Answer. If we are ordered to conduct an adjustment by legal deadlines, we will do so. This timing for an adjustment likely will affect basic census operations.

Question 23. To what extent are you relying on groups like MALDEF for assistance in reaching the Hispanic community for example?

Answer. For both outreach and recruiting, we are working directly with a wide range of organizations including:

National and local private-sector organizations, including minority organizations (MALDEF, NAACP, National Congress of American Indians, U.S. Hispanic Chamber of Commerce, and so on); community group networks; civic groups; and religious groups.

National and local public-sector agencies and organizations, including the networks of the Census Community Awareness Program; state data centers; Complete Count committees; and other state, local, and federal government units.

Other efforts to reach various minority groups include specialized ad campaigns, outreach materials in various languages, and special toll-free assistance telephone numbers.

Question 24. I understand that the INS was instructed in 1980 not to conduct any citizenship sweeps while the census count was underway due to the fear it creates and the resulting difficulty in getting an accurate count. Can you tell me what plans INS may have to suspend checks or any requests the Census Bureau may have to the INS or any other agency?

Answer. The Census Bureau discussed with the INS its enforcement policies and other issues relating to the 1990 census. Former Director Jack Keane and Commissioner Alan Nelson met several times over the past year and convened one joint meeting with senior staff from both agencies.

Commissioner Nelson and his staff assured us that enforcement efforts focus on places of employment and employer sanctions. The Census Bureau will not request INS to curtail these activities during the census period. A check in our regional offices confirms the absence of any reports of residential raids.

We will focus on promotional efforts to overcome possible mistrust toward census confidentiality. In addition, the INS has recognized the need to avoid even the appearance that its activities have any relation to the census.

Question 25. Does the Census Bureau value any estimates of the illegal aliens population of the U.S.? Are you aware of any unofficial estimates that have been made by Bureau personnel? If so, what are those estimates?

Answer. The Census Bureau has conducted research to estimate the undocumented population included in the census and surveys. We estimate that there were between 3 and 5 million undocumented aliens in the country in 1986. Since that time, the Immigration and Naturalization Service (INS) conducted a legalization program. Over 1.7 million aliens applied for legal status who had been living in the United States as undocumented aliens since January 1, 1982. We currently are involved in research to update our estimate of the undocumented population.

Question 26. What role is the Census Bureau playing in the trade data bank mandated by Congress last year?

Answer. The Bureau of the Census provides monthly the official U.S. statistics on merchandise trade. These data will be made available to the National Trade Data Bank residing in the Office of the Under Secretary for Economic Affairs, Department of Commerce. The data on merchandise trade include, among other variables, exports and imports by commodity, country of origin or destination, Customs port of import or export, quantity, value, and shipping weight.

The Census Bureau also will provide data from the 1987 Census of Service Industries on the dollar volume of receipts from exported services for approximately 26 industries. These include advertising agencies; computer programming, data processing, and other computer-related services; legal services; and engineering, accounting, research, management, and related services. Additionally, some data on domestic services may be provided to the Data Bank.

Question 27. Is the Standard Statistical Establishment List available to statisticians outside the Census Bureau? Do other agencies of the Federal government use

this list of businesses to conduct surveys or do they compile their own lists? If they compile their own lists, why do agencies not share lists of business establishments? I understand that in Japan the Statistics Bureau is responsible for issuing a directory of the businesses which it finds during its Establishment Census. Has the Census Bureau ever considered issuing such a directory to facilitate economic activity in the United States? What would be the benefits of such a directory and the main problems associated with issuing it?

Answer. The SSEL is a current list of all U.S. business firms and their establishments. It contains economic information for approximately 6 million businesses with employees, and during census years (conducted for years ending with a "2" or "7"), approximately 7 million nonemployer businesses and 2.5 million farm businesses. The SSEL obtains information primarily from the quinquennial economic censuses, from annual surveys, and from Internal Revenue Service (IRS) tax returns, as authorized by Title 26, United States Code. The information for small establishments on the SSEL are obtained primarily from IRS tax data. The confidentiality provisions of Title 13, USC, prohibit disclosure of SSEL information to anyone outside of the Census Bureau. Title 26, the Internal Revenue Code, also prohibits outside use of the SSEL. The supplying of the IRS data to the Census Bureau is authorized in Title 26, but the disclosure of these IRS data to the others is prohibited.

In addition to the Census Bureau, the Bureau of Labor Statistics (BLS) and the National Agricultural Statistics Service (NASS) maintain business lists for internal use. The BLS compiles a list of nonfarm businesses and the NASS compiles a list of farm businesses. The BLS list, which includes economic information on approximately six million U.S. businesses with paid employees, obtains data from affiliated state agencies and from current surveys. The NASS list includes basic information for farm businesses obtained from the administrative records of the Department of Agriculture, current surveys, and various other sources.

The sharing of the BLS list information is controlled by agreements with state officials. BLS expects to be able to share data from all states for exclusively statistical purposes once the next round of agreements has been negotiated. Currently, ten or so states prohibit the disclosure of such data. Current law does authorize NASS to share farm list information with other agencies for statistical purposes, and the Census Bureau obtains such data from NASS for use in the Census of Agriculture.

To address concerns of the Economic Policy Council (EPC) relating to improving the economic statistics produced by the Federal Government, the Working Group on the Quality of Economic Statistics was formed. Findings of the group indicated that the quality of economic data of the three agencies that collect the largest share of basic economic data through surveys (Census, BLS, and NASS) could all be improved if each agency had access to the other's list. The Working Group recommended two specific methods to allow the agencies to share their business-list information. The first was to propose new legislation allowing agencies to exchange list information. The second was to designate BLS and NASS as "Central Collection Agencies" (CCAs) to maintain the nonfarm and farm lists, respectively, for use by the three agencies in their statistical programs. A CCA is an agency recognized as the sole sponsor of a particular data collection and designated by the Director of the Office of Management and Budget (OMB) to meet the needs of other specified agencies for the same or similar data. The OMB could designate the CCAs administratively under the Paperwork Reduction Act (44 U.S. Code 3509). Currently, the Administration is working on proposals that would allow list sharing among Federal statistical agencies.

The private sector currently publishes business directories. These are developed for both statistical and nonstatistical purposes—including use as commercial mailing lists and marketing tools. The SSEL, on the other hand, is maintained only for statistical purposes, and we have given assurances to our business respondents that no other uses will be made of any individual company's information. All previous discussions regarding disseminating business list information have focused on those Federal agencies that would use the data only for statistical purposes. There is no consideration being given to general distribution of the SSEL.

Question 28. What is your opinion of the need to review existing Census statutes to ensure they are up-to-date and not unfairly hindering collection and dissemination? Is there any comprehensive review now underway that you are aware of?

Answer. The Census Bureau annually reviews the provisions of Title 13 to determine what, if any, changes are needed to carry out the work authorized by statute.

Question 29. How reliable are your estimates? According to GAO you counted 5 million more people in 1989 than you expected to. Why? How many people do you expect to count this time? How reliable is this estimate?

Answer. The reliability of Census Bureau estimates vary depending on the characteristic of interest, the size of the population being estimated, and the geographic level of the estimate. For example, an estimate of the total population of the United States will have better reliability than an estimate of, say, the number of Hispanic females for a particular state.

Estimates of the total population (both before the 1980 census and now) are based on vital statistics, demographic analysis techniques, and various assumptions about birth rates, immigration, and the like. As such, they cannot be expected to be without some margin of error. The difference of 5 million out of 226 million in 1980 was only about 2%, and resulted primarily from improved coverage compared to the 1970 census. For 1990, we expect to count about 250 million people, although different estimates can be derived if different assumptions are used.

Question 30. Some may wonder if we actually need to do a census every 10 years. If the estimates were more reliable, could we forget the full census every 10 years?

Answer. If population estimates were to become sufficiently reliable, then certain legal issues would need to be addressed before we could eliminate the full census. For example, the Constitution requires an "enumeration" every ten years "in such manner" as Congress directs. Title 13, U.S.C., also requires a census every ten years, and presently Title 13 specifically forbids the use of sampling "for purposes of apportionment of Representatives in Congress among the several states . . .".

Many population estimates and sample surveys on a wide variety of subjects depend on the census as a sampling universe and a benchmark for calibration and control. Without the census as a universe, the reliability of many estimates would suffer over time as their sampling frames age and go out of date.

Further, sampling techniques and statistical modeling techniques need larger sample sizes to produce reliable estimates for smaller geographic areas, such as blocks and census tracts. The census currently produces accurate data for these small areas due to its complete count of people and housing units and its large sample sizes for other characteristic data. A complete census also has better coverage than sample surveys. Without the census and its sample data, the many users of small area data would be concerned about the decrease in reliability of such estimates. These users include most state and local governments who redraw their voting district boundaries periodically, as well as many state and local planning agencies.

We are, however, looking for alternative ways to simplify the basic decennial census and concentrate on accomplishing its constitutionally-related requirements, and to collect some data outside the basic decennial census.

Question 31. Should the 1990 Census be used to experiment with a shorter questionnaire to see if it improves response rates? If not, why not?

Answer. The content and length of the census questionnaire must balance the time it takes for a respondent to complete the form and the needs for data. Generally speaking, the items asked of all households are those for which there is a proven programmatic or legal requirement for the data for small geographic areas. We have no evidence that marginal changes in the length of the questionnaire will have any effect on response rates. For example, in 1980, the overall mail response rates for the short and long forms were virtually the same.

Question 32. The Bureau has already begun to plan for the 2000 census. Would you describe those efforts?

Answer. Our chief priority now is conducting a successful 1990 census. The Census Bureau, Department of Commerce, Office of Management and Budget, General Accounting Office, and many in Congress (House Report 99-669) recognize, however, that an early start for research and analysis for the 2000 Decennial Census is necessary. The 1990 census planning experience has shown that longer lead times are required to fully test, evaluate, and complete procurement processes for new methods and associated technologies which may have potential use for the decennial census.

Within the Census Bureau, the 21st Century Decennial Census Planning Staff's fundamental task is to direct this early planning effort. Special emphasis is being given to technological advances that can be incorporated in the census process; reviewing data needs; and alternative methodologies.

We are providing an opportunity for input and review by outside groups. To start this consultation process, the Census Bureau has asked for comments on a proposed statement of direction for future censuses. That direction is to simplify the basic decennial census and concentrate on accomplishing its constitutionally related requirements, and to collect other demographic and housing unit data outside the basic decennial census while increasing their effectiveness by better targeting user needs.

Question 33. A number of possible questions were not included on the census questionnaire. What plans does the Bureau have for additional surveys in the future? Specifically, a number of individuals and organizations have proposed that the Bureau develop a plan to develop procedures for such a survey and do you have any plans to conduct a pretest of such a survey?

Answer. The Census Bureau has no current plans to conduct a survey of disability and activity limitations, but the Bureau has prepared a cost estimate for developing, conducting, and processing a post-enumeration disability survey. The estimate was prepared at the request of a member of Senator Paul Simon's staff. The request specified that the design and content of this survey should take into account the results of the pretest of a proposed 1980 census disability follow-on survey and be large enough to provide reliable estimates at the state level. Two cost estimates were requested: one for a survey of adults only and one for a survey of adults and children.

The Census Bureau prepared the cost estimates on the basis of a tentative set of survey specifications. It is likely that these specifications would change if a more formal planning operation were conducted. The estimated cost of conducting a survey of adults only was \$15.6 million, and the cost of a survey of both adults and children was estimated to be \$20 million.

Such a survey would require a major planning effort, but the effort would build on the work done in preparation for the proposed follow-on survey to the 1980 census. Funding plans for that survey called for the Census Bureau to solicit funds from those Federal agencies with a need for data on persons with disabilities. The effort to secure funding in this way failed.

Question 34. Does the Bureau have a working definition of "homeless" as a distinct category? If so, what is the definition?

Answer. There is no generally agreed-upon definition of "homelessness", and the Census Bureau will not provide an official definition or total count of "the homeless" from the 1990 census. Rather, we will provide data on demographic, social, and economic characteristics on *selected components* of this population. These data can be used as building blocks to construct various estimates of "the homeless" appropriate to different purposes.

Question 35. What outreach programs are underway to ensure a complete and accurate count of the homeless?

Answer. We will count components of the homeless population in two major operations, one, a special night-time operation, and one that is part of the regular enumeration process. First, we will conduct one special operation ("shelter and street night") on March 20 and 21, 1990 to count persons in *pre-identified* emergency shelters (public and private) and open locations in the streets or other places not intended for habitation. Other components sometimes included in counts of the homeless will be enumerated during regular census operations. These include "doubled-up families", shelters for abused women, and transient sites such as campgrounds which may provide temporary shelter.

Before the "shelter and street night" enumeration, we will work with local officials, persons who work with the homeless, and the homeless to identify the shelter and street locations to be visited. We will encourage those who work with the homeless, and the homeless themselves, to apply for work as enumerators.

Attachment 3 provides additional detail on our plans.

Question 36. Have organizations acting as advocates for the homeless cooperated in outreach programs? Has the Census Bureau attempted to contact these organizations? If so, what are the results of these efforts? Have any of the advocate organizations contacted the Bureau for assistance or information?

Answer. We have, and continue to exchange information and work with local officials and advocates for the homeless, and overall these persons have been very cooperative and supportive. We believe these activities have helped us to better plan our efforts for 1990.

Question 37. Is it true that one company won 22 or 23 competitive bids for address lists for virtually the entire Census? Please provide any legal or other analyses prepared for or by the Bureau regarding this process.

Answer. There were 21 bid areas for about 56 million addresses in large cities and metropolitan areas. A single vendor did win the bid for all 21 areas. We later purchased a second list for Honolulu from another vendor. Attachments 4 and 5 are two memoranda that provide background and methodological information on this process.

Question 38. Michael Stoto at the hearing alleged that "One additional casualty of the undercount/adjustment debate has been the Bureau's long standing policy of openness to scientific criticism." Could the Bureau please respond to this assertion?

Answer. We disagree with Mr. Stoto's assertion. While it is necessary that we must limit statements about matters under litigation in which we are defendants, we continue to be open and welcome comments and suggestions about our plans.

Question 39. What was the fiscal year 1990 request of the Census Bureau on the budget for enumerators and outreach?

Answer. The fiscal year 1990 budget includes \$587 million in personnel costs for enumerators, crew leaders and clerical office staff in the district offices (DOs), including the Puerto Rico DOs. The fiscal year 1990 budget includes \$20.8 million for outreach and publicity, including:

Community Awareness and Products Program; Census Promotion Staff and Activities; School Project; National Services Program; 1990 Advertising Campaign; and Census Advisory Committees.

Question 40. Would the Census Bureau accept money from a community to hire additional enumerators?

Answer. We would not accept funds from the localities to pay extra enumerators. This is due to several concerns. Among these would be the potential management, political, and perceptual problems that might arise if we used enumerators hired or paid by the community. For example, as discussed at the hearing, this might lead to perceived or even real inequities in the quality of the census for different areas. To preserve both the appearance and reality of objectivity, the persons who conduct our canvassing, coverage checks, and household interviews must be employees hired and paid by the Census Bureau.

For areas where cultural, language, or safety factors make it more difficult for enumerators to conduct canvassing or interviewing, we will accept volunteers to assist enumerators as "cultural agents," interpreters, or escorts. We also will accept volunteers to supplement our outreach and community awareness staff. In any of these capacities, of course, this generally would require these persons to live in the area where they would work.

We believe we have requested funds for sufficient enumerator positions to complete a timely and quality census. A more likely problem will be that of finding sufficient qualified staff to fill these positions. The local communities can be of assistance here by helping to identify sources of qualified applicants.

Local involvement in publicity and outreach efforts also is important, and we encourage local governments to use available funds to supplement national outreach efforts with locally-tailored campaigns. Involvement in the local review process also is encouraged since local knowledge can be very helpful in finding potential coverage or geographic problems.

Question 41. What cuts in the Census Bureau's budget for the last 2 years came through absorption?

Answer. Congress has cut \$80.8 million from the 1990 decennial census budget over the 1984 through 1989 period. This total includes cuts of \$24.8 million in fiscal year 1988 and \$46.6 million in fiscal year 1989. The only specific cuts were in fiscal year 1989 for a \$25 million contingency fund we requested, and \$750 thousand we requested for Year 2000 census planning. The other cuts made by Congress were unspecified across-the-board reductions that the Bureau had to absorb.

CHART 1: Tentative Release Schedule for the Computer Tape Files

SUMMARY TAPE FILES (STF)

Year(s) of release	Tape ID #
1991-1992	STF 1A STF 1B
1992	STF 1C
1993	STF 1D
1992	STF 2A STF 2B STF 2C
1992	STF 3A
1993	STF 3B STF 3C STF 3D
1992-1993	STF 4A STF 4B
1993	STF 4C

PUBLIC-USE MICRODATA SAMPLES

Year(s) of release	Tape ID #
1993	PUMS-5 Percent PUMS-1 Percent

SUBJECT SUMMARY TAPE FILES

Year(s) of release	Tape ID #
1993	SSTF 1-20

SPECIAL FILES

Year(s) of release	Tape ID #
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1992	EEO
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1993	County-to-County
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(NOTE: Other special files may be produced based on user demand and availability of resources.)

CHART 2: Preliminary Release Schedule for Printed Reports

Year(s) of release	Report Series	Report Title
1991-1992 1992	1990 CPH-1 (state) 1990 CPH-1-1 (U.S.)	Summary Population and Housing Characteristics
1991-1992 1992	1990 CPH-2 (state) 1990 CPH-2-1 (U.S.)	Population and Housing Unit Counts
1992-1993	1990 CPH-3 (MSA/PMSA and balance of state)	Population and Housing Characteristics for Census Tracts and Block Numbering Areas
1993	1990 CPH-4 (state)	Population and Housing for Congressional Districts of the 103rd Congress
1992 1993	1990 CPH-5 (state) 1990 CPH-5-1 (U.S.)	Summary Social, Economic, and Housing Characteristics
1992	1990 CP-1 (state) 1990 CP-1-1 (U.S.)	General Population Characteristics
1992	1990 CP-1-1A (U.S.)	General Population Characteristics for American Indian and Alaska Native Areas
1992	1990 CP-1-1B (U.S.)	General Population Characteristics for Metropolitan Statistical Areas
1992	1990 CP-1-1C (U.S.)	General Population Characteristics for Urbanized Areas

1993	1990 CP-2 (state) 1990 CP-2-1 (U.S.)	Social and Economic Characteristics
1993	1990 CP-2-1A (U.S.)	Social and Economic Characteristics for American Indian and Alaska Native Areas
1993	1990 CP-2-1B (U.S.)	Social and Economic Characteristics for Metropolitan Statistical Areas
1993	1990 CP-2-1C (U.S.)	Social and Economic Characteristics for Urbanized Areas
1993	1990 CP-3 (U.S.)	Population Subject Reports
1992	1990 CH-1 (state) 1990 CH-1-1 (U.S.)	General Housing Characteristics
1992	1990 CH-1-1A (U.S.)	General Housing Characteristics for American Indian and Alaska Native Areas
1992	1990 CH-1-1B (U.S.)	General Housing Characteristics for Metropolitan Statistical Areas
1992	1990 CH-1-1C (U.S.)	General Housing Characteristics for Urbanized Areas
1993	1990 CH-2 (state) 1990 CH-2-1 (U.S.)	Detailed Housing Characteristics
1993	1990 CH-2-1A (U.S.)	Detailed Housing Characteristics for American Indian and Alaska Native Areas
1993	1990 CH-2-1B (U.S.)	Detailed Housing Characteristics for Metropolitan Statistical Areas
1993	1990 CH-2-1C (U.S.)	Detailed Housing Characteristics for Urbanized Areas
1993	1990 CH-3-1-10 (U.S.)	Housing Subject Reports

(NOTE: Other reports may be produced throughout 1991-1993 depending on user demand and availability of resources.)

CHART 3: Preliminary Release Schedule for Other Media

Microfiche

Year(s) of release	Microfiche ID #
1991-1992	STF-1A
1992	STF 1B (Block Statistics)
1992	STF-3A

CD-ROM

Year(s) of release	CD-ROM ID #
1991-1992	STF-1A
1992	STF-1B (Block Statistics)
1992	STF-1C
1992	STF-3A
1993	STF-3B
1993	STF-3C

The 1990 Decennial CensusResearch, Evaluation, and Experimental Program

The Bureau of the Census has grouped most of the component studies of the 1990 Research, Evaluation, and Experimental (REX) Program into three principal areas. We have titled these groupings "Content," "Coverage," and "Procedures and Processing," respectively.

The Content grouping comprises those REX studies that will ensure that we obtain information on the following:

1. We will assess the quality of data from the 1990 census in order that we might provide information about the sources and magnitude of nonsampling errors introduced during data collection and processing.
2. We will assess the effect of sampling, nonsampling, coverage, and geographic errors on data use. We will identify major uses of the data and evaluate how errors in census data affect applications.
3. Using the data collected in the census and the evaluations as a base, we will determine more efficient and more accurate ways of collecting census data.
4. We will implement procedures that will allow for monitoring, documenting, and if appropriate correcting errors identified in data collection and processing.

The Coverage studies for the 1990 census will provide accurate and informative measures of population and housing coverage for different population groups, and will also provide information of selected correlates of undercoverage such as demographic and housing characteristics, type of enumeration, and geography. We will evaluate the success of coverage improvement programs and will also identify where coverage deficiencies remain. Furthermore, we will evaluate the quality of our coverage evaluation techniques themselves.

Evaluation and research efforts in the area of census Procedures and Processing will emphasize new and expanded techniques for the 1990 census. Since we have implemented major innovations in the areas of automated, decentralized data processing, we will concentrate on these areas in order to determine if the new techniques are cost effective and whether they will produce the desired results. Properly designed, the Content and Coverage objectives described above will complement the Procedural and Processing studies by providing data on how methods and operations affect data quality. We have designed these studies to obtain comparative measures by processing office and by type of enumeration by ensuring that the studies will yield important data about decentralized automated processing. We have also designed new and expanded programs for the 1990 census that will

evaluate the automation of our geographic data base (TIGER) and our enhanced outreach and promotion efforts.

The primary objectives that we have identified for the 1990 REX Program, as for any research and evaluation effort, are:

- A. to provide data for Census Bureau use in assessing and improving methods and operations for future censuses;

and
- B. to provide information to data users concerning the sources and effects of errors in census data.

In addition, we have used the following specific criteria in selecting the components of the 1990 REX Program:

1. The proposal should be capable of integration within the staffing and fiscal resource limitations of the overall REX program;
2. The proposal should require an actual census environment for proper measurement. (Otherwise, it would be more appropriate to integrate the proposal into a test census or other special test.)
3. The proposal should not adversely affect the production and delivery of apportionment and redistricting counts by the legislated deadlines.
4. The proposal should not affect the quality of the census data in any way that would jeopardize their major uses.

To ensure the facility for assessing relative priorities among specific proposals, we defined the following additional criteria to assess the extent to which:

5. the results of the study would be directly useful for planning a particular aspect of the Year 2000 census;
6. the proposal would make an important contribution toward evaluating the quality of the 1990 census data (the proposal must evaluate the quality of the census data in terms of how well they meet the intended uses);
7. the proposal would make an important contribution toward evaluating the cost and benefits of 1990 census procedures, methods, and systems in collecting and processing census data;

SUMMARY OF 1990 CENSUS PLANS FOR ENUMERATION OF SELECTED COMPONENTS OF THE HOMELESS POPULATION

Information has been lacking about the numbers and characteristics of the nation's homeless population. The Census Bureau is actively building a nationwide operation for the 1990 census to provide demographic, social, and economic data on selected components of the homeless population.

There is no generally agreed-upon definition of "homelessness." As such, the Census Bureau will not provide an official definition or total count of "the homeless." Rather, we will provide data users the building blocks to construct a count of "homeless" appropriate to their purposes.

The Census Bureau will count components of the homeless population in two major operations, one, a special night-time operation, and one that is part of the regular enumeration process.

First, we will conduct one special operation ("shelter and street night") on March 20, 1990 to count persons in pre-identified emergency shelters (public and private) and open locations in the streets or other places not intended for habitation. This special operation includes all hotels/motels costing \$12 or less per night, hotels/motels used entirely to shelter the homeless (regardless of cost), and pre-identified rooms in hotels/motels used for homeless persons and families. Enumeration will occur when the population is generally settled for the night. For shelters, enumeration will usually occur from 6 p.m. to midnight; street enumeration, from 2 a.m. to 4 a.m.; abandoned and boarded-up buildings from 4 a.m. to 6:30 a.m.

Other components which are sometimes included in the count of the homeless population will be enumerated as part of the regular census operations. These include "doubled-up families," shelters for abused women, persons with no usual home living in tents at commercial campgrounds, and institutions such as local jails which may provide temporary shelter. In institutions, we will not know who has a usual home and such persons cannot be identified separately as homeless.

Before the "shelter and street night" enumeration, we will work with local officials, persons who work with the homeless, and the homeless to identify the shelter and street locations to be visited during the operation. We will encourage those who work with the homeless, and the homeless themselves, to apply for work as enumerators.

We will attempt to ask all persons in shelters and all persons living on streets the basic demographic questions. Additional questions about social and economic characteristics will be asked only for a sample of persons in shelters.

In the street enumeration, sleeping persons will not be awakened to answer questions. Rather, enumerators will estimate as best they can the person's age, sex, and race. We will follow the same procedure for persons who are not in a state of mind to answer questions. If a sleeping person is covered up so that characteristics cannot be determined, the person will be counted and characteristics will be assigned later by a computerized algorithm.

We will tabulate information about the count and the characteristics of the population of each of the selected component settings in which the homeless live. Data will be available for persons and families living in shelters and low-cost hotels and motels, in nonsheltered locations, in shelters for abused women, and so forth. For all except the population living in the streets, information will be available from the 1990 census about characteristics such as educational attainment, veterans status, source of income in 1989 (if any), and work activities and unemployment cross-classified by sex, race, Hispanic origin, and broad age groups.

Persons, or entire families, who are doubled up in housing units with friends or relatives are considered "homeless" by some and "precariously housed" by others. These families will be enumerated in the regular census operations. We will provide tabulations of all housing units with more than one family cross-classified by characteristics such as income, poverty status, and the percentage of family income spent on housing. Researchers and planners can use these data as indicators of the precariously housed or homeless as they see fit.

In summary, the 1990 census will provide a count and basic characteristics of selected components of the homeless population at the national and local levels. We are measuring components of the homeless on one night, not the dynamics of homelessness. The homeless, and especially those living on the streets, are among the most difficult populations to count completely because of the obvious physical dangers to enumerators working at night and because some people will avoid the census. We expect that the count of the "street" component will be very conservative. A general-purpose survey such as the census cannot provide comprehensive data on the homeless. Data users will obtain basic data on components of the homeless population throughout the United States collected in a uniform manner as of the same date. They will have the flexibility to combine selected components or analyze components separately.

For more information:

Cynthia M. Taeuber
Population Division
Bureau of the Census
Washington, DC 20233

Telephone: (301)763-7883



ATTACHMENT 4

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

MAY 10 1989

1990 DECENNIAL CENSUS
PRELIMINARY RESEARCH AND EVALUATION MEMORANDUM NO. 8

Prepared by: James B. Treat *Substained for JT*
Statistical Support Division

Subject: Methodology for the 1990 Census Mailing List
Evaluation

The attached memorandum reports the results of research
undertaken by Census Bureau staff.

Attachment

NOTE: The data in this report are preliminary and tentative in nature. Users of the results memoranda should understand that these documents are prepared for internal office use, with the aim of circulating information among Census Bureau staff members as quickly as possible. These memoranda, therefore, do not undergo the careful review and clearance normally associated with published census documents. Conclusions and recommendations contained herein essentially reflect the thoughts of certain staff members at the time of publication and should not be interpreted as statements of Census Bureau position.

8. the proposal would be conducive to combination, where feasible, with other proposals with similar goals or operational requirements;
9. the proposal would accommodate commitments to oversight and advisory groups, such as in responding to audit reports, Office of Management and Budget guidance, and the like;
10. the proposal would make improvements in timeliness and quality to the census results, and to the method systems, and procedures that we use to produce them;
11. the proposal would result the in replacing of human intervention in the census process.

As you review the studies that we propose to conduct as part of the 1990 REX Program, please be mindful that unforeseen budgetary factors may necessitate program alterations or reductions.



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

April 4, 1987

STSD 1990 DECENNIAL CENSUS MEMORANDUM #AA-12

MEMORANDUM FOR: Susan M. Miskura, Chief
Decennial Planning Division

From: Charles D. Jones, Acting Chief *cy*
Statistical Support Division

Subject: Methodology for the 1990 Census Mailing List
Evaluation

I. Introduction

The following documents the methodology for the 1990 Census Mailing List Evaluation. This memorandum will be followed by a more detailed report which will include the initial steps involved with the sample design and implementation of this evaluation.

The results of the evaluation are not documented here because they are procurement sensitive data.

Please direct any comments to Bob Edson (763-2664, Room 3650-3).

II. Evaluation

A. Background

To compare the lists in terms of coverage and quality, the Census Bureau stratified the country into 21 bid groups (Attachment 1). The vendors could bid on as many bid groups as they wanted. Each vendor provided their address lists for a sample of carrier routes in each bid group. The Census Bureau matched (by computer and then clerically) the addresses between and within lists and sent the unduplicated list to the United States Postal Service (USPS) for a deliverability check. Results for carrier routes checked-in by the Data Preparation Division (DPD) were used to compare lists as described below by bid group.

B. Estimation Procedure for Coverage

The results of the evaluation were used to compare the vendor lists within each bid group for coverage. Since not all of the sample carrier routes were checked-in, the results were adjusted to account for the missing data. As described below, the data were adjusted in two ways to produce estimates of list coverage.

- Observed Estimate - Sample carrier routes not checked-in were assumed to behave similarly to those that were checked-in. Thus, the checked-in carrier routes were treated as a random subsample of the original sample of carrier routes to produce this estimate.
- Extreme Estimate - Within bid group, the list with the highest observed estimate of coverage was determined. When comparing this list separately with each other list, it was assumed that, from the carrier routes not checked-in, all addresses only on the list with the higher observed estimate of coverage were not deliverable while those only on the other list were deliverable. As such, the extreme estimate of coverage for the list with the higher observed estimate of coverage is a lower bound for the estimate that would have been produced if all sample carrier routes were checked-in. The extreme estimate for the other list is an upper bound for the estimate that would have resulted from the entire sample.

These two estimation procedures are described below.

1. Observed Estimate

The notation below relates to the comparison of a pair of lists i and j .

Define:

- $m_{i,j,k}$ = the number of matched (computer or clerical) addresses (duplicates, undeliverables, and deliverables) between lists i and j in carrier route k checked-in by the DPD ($m_{i,j,k} = m_{j,i,k}$).
- $d_{i,j,k}$ = the number of unmatched deliverable addresses only on list i in carrier route k .
- $b_{i,j,k}$ = the number of addresses on list i classified as a duplicate of a deliverable address on another list in carrier route k .
- c = the number of carrier routes checked-in out of n (the number in the sample). For notational simplicity order the carrier routes so that 1 through c are the checked-in carrier routes and $(c+1)$ to n are those that were not checked-in.

A pair of lists were compared for coverage based on the number of valid addresses. An address was "valid" if it was included on both lists (match) or the USPS designated the address as deliverable.

Define:

$$x_{ijk} = a_{ijk} + d_{ijk} + b_{ijk} + d_{ijk} + b_{ijk} = x_{ijk}$$

= total number of valids in carrier route k

$$y_{ik} = a_{ik} + d_{ik} + b_{ik}$$

= total number of valids on list i in carrier route k

$$y_{jk} = a_{jk} + d_{jk} + b_{jk}$$

= total number of valids on list j in carrier route k

Then:

$$p_{i1} = \frac{\sum_{k=1}^C y_{ik}}{\sum_{k=1}^C x_{ik}} = \text{the proportion of valids in the bid group for list i, and}$$

$$p_{j1} = \frac{\sum_{k=1}^C y_{jk}}{\sum_{k=1}^C x_{jk}} = \text{the proportion of valids in the bid group for list j.}$$

These values were used to calculate the difference in coverage rates as follows when comparing pairs of lists. Note that pairwise comparisons need only be made between the list with the highest coverage and each of the other lists. We assume without loss of generality that the list code (1, 2, and 3) refers to the rank in terms of the number of valid addresses.

- Comparing Lists 1 and 2 (i.e., ignoring list 3)

$$\begin{aligned}
 p_{12} - p_{21} &= \frac{(m_{12} + d_{12} + b_{12}) - (m_{12} + d_{21} + b_{21})}{m_{12} + d_{12} + b_{12} + d_{21} + b_{21}} \\
 &= \frac{d_{12} + b_{12} - d_{21} - b_{21}}{m_{12} + d_{12} + b_{12} + d_{21} + b_{21}}
 \end{aligned}$$

- Comparing Lists 1 and 3 (i.e., ignoring list 2)

$$\begin{aligned}
 p_{13} - p_{31} &= \frac{(m_{13} + d_{13} + b_{13}) - (m_{13} + d_{31} + b_{31})}{m_{13} + d_{13} + b_{13} + d_{31} + b_{31}} \\
 &= \frac{d_{13} + b_{13} - d_{31} - b_{31}}{m_{13} + d_{13} + b_{13} + d_{31} + b_{31}}
 \end{aligned}$$

2. Extreme Estimate

This estimate was calculated using the variables defined for the observed estimate as well as the following. Assume the comparison is between lists i and j .

Define:

$m_{i,q}$ = the number of matched addresses between lists i and j in carrier route q not checked-in by DPD ($m_{j,q} = m_{i,q}$).

$d_{i,q}$ = the estimate of the number of deliverables only on list i in carrier route q .

Assume without loss of generality that list i has the higher observed coverage rate when compared to list j , therefore $p_{i,j} > p_{j,i}$. Also assume that from the non-checked-in carrier routes q ($q = c+1, c+2, c+3, \dots, n$) all the addresses only on list i are not deliverable and all of the addresses only on list j are deliverable. Therefore, for all q , $d'_{j,q} = 0$ and $d'_{i,q}$ is the number of addresses on list j but not on list i in carrier route q . The coverage rates are as follows:

$$p_{1j} = \frac{y_{1j}}{x_{1j}} = \frac{\sum_{k=1}^c y_{1jk} + \sum_{q=c+1}^n (m_{1jq} + d_{1jq})}{\sum_{k=1}^c x_{1jk} + \sum_{q=c+1}^n (m_{1jq} + d_{1jq} + d'_{1jq})}$$

$$p_{3j} = \frac{y_{3j}}{x_{3j}} = \frac{\sum_{k=1}^c y_{3jk} + \sum_{q=c+1}^n (m_{3jq} + d_{3jq})}{\sum_{k=1}^c x_{3jk} + \sum_{q=c+1}^n (m_{3jq} + d_{3jq} + d'_{3jq})}$$

These values were used to calculate the difference in coverage rates when comparing pairs of lists as follows. Again assume that list 1 has the highest coverage rate and list 3 the lowest in terms of valid addresses.

- Comparing Lists 1 and 2 (i.e., ignoring list 3)

$$p_{1j} - p_{2j} = \frac{(m_{1j} + m_{2j} + d_{1j} + b_{1j} + d_{2j}) - (m_{1j} + m_{2j} + d_{2j} + b_{2j} + d_{2j})}{m_{1j} + m_{2j} + d_{1j} + b_{1j} + d_{2j} + d_{2j} + b_{2j} + d_{2j}}$$

$$= \frac{d_{1j} + b_{1j} - d_{2j} - b_{2j} - d_{2j}}{m_{1j} + m_{2j} + d_{1j} + b_{1j} + d_{2j} + d_{2j} + b_{2j} + d_{2j}}, \text{ since } d_{2j} = 0$$

- Comparing Lists 1 and 3 (i.e., ignoring list 2)

$$p_{1j} - p_{3j} = \frac{(m_{1j} + m_{3j} + d_{1j} + b_{1j} + d_{1j}) - (m_{1j} + m_{3j} + d_{3j} + b_{3j} + d_{3j})}{m_{1j} + m_{3j} + d_{1j} + b_{1j} + d_{1j} + d_{3j} + b_{3j} + d_{3j}}$$

$$= \frac{d_{1j} + b_{1j} - d_{3j} - b_{3j} - d_{3j}}{m_{1j} + m_{3j} + d_{1j} + b_{1j} + d_{3j} + d_{3j} + b_{3j} + d_{3j}}, \text{ since } d_{3j} = 0$$

The two estimates of the difference in coverage rates are summarized in Table 1.

Table 1

Lists in Comparison	Estimates of the Difference in Coverage Rates	
	Observed	Extreme
1 and 2	$p_{12} - p_{21}$	$p_{12} - p_{21}$
1 and 3	$p_{13} - p_{31}$	$p_{13} - p_{31}$

3. Calculation of Variance Estimate

The variance estimate for the coverage rate difference was obtained from carrier routes checked-in with 125 or more addresses. This procedure was adopted for two reasons:

- Since there were a small number of carrier routes returned with fewer than 125 addresses, incorporating them into the variance estimate calculation would have had a trivial effect. Among other data, Attachment 2 shows that the number of small carrier routes returned (less than 125 addresses) as a percent of the number returned in bid groups with 2 or more lists is at most 3.5 percent.
- An excessive amount of computer and analytical work would be required to reconstruct the clustering and sample selection for minimal gain.

This procedure would disregard the effect of carrier routes with less than 125 addresses on the variance. However, part a. above states that this effect would be minimal. In addition, these carrier routes were originally clustered with larger routes in the same ZIP Code. To treat the small carrier routes as separate clusters in the variance estimation calculation would introduce far more error than that which would result from their exclusion. Note that there were 418 sample carrier route clusters in each bid group.

For carrier route k , the difference in the number of valids in list i and list j as a proportion of the total number of valids is defined as:

$$\frac{V_{ik} - V_{jk}}{V_{ik} + V_{jk}} = \frac{V_{ik} - V_{jk}}{V_{ik} + V_{jk}}$$

Let:

N = the total number of carrier route clusters in the bid group

c' = number of carrier routes checked in with 125 or more addresses in a given bid group, so c' is less than or equal to c .

Then:

$$R_{ij} = \frac{\sum_{k=1}^N w_{k,j} - w_{i,j}}{\sum_{k=1}^N x_{k,j} - x_{i,j}} = \text{the actual difference in coverage rates between list } i \text{ and } j \text{ in the bid group.}$$

The sample estimate of the difference in coverage rates for the bid group is:

$$r_{ij} = \frac{w_{i,j} - w_{j,j}}{x_{i,j} - x_{j,j}} = \frac{\sum_{k=1}^{c'} w_{k,j} - w_{j,j}}{\sum_{k=1}^{c'} x_{k,j} - x_{j,j}}$$

Define:

f = the sampling fraction = $\frac{c'}{N}$, and

$\bar{x}_{i,j} = \frac{x_{i,j}}{c'}$ = the estimated average number of valid addresses in a carrier route.

Then from Sampling Techniques, third edition, by William G. Cochran, p. 155 the estimate of the variance of R_{ij} is

$$v(r_{ij}) = \frac{(1-f)}{c'(c'-1)} \frac{\sum_{k=1}^{c'} (w_{k,j} - r_{ij}x_{k,j})^2}{(\bar{x}_{i,j} - \bar{x}_{j,j})^2}$$

$v(r_{ij})$ can be written in another form which facilitates its calculation.

$$v(r_{ij}) = \frac{(1-f)}{c'(c'-1)(x_{ij})} \left[\frac{c'}{\sum_{k=1}^c w_{ijk}^2 + r_{ij}^2} + \frac{c'}{\sum_{k=1}^c x_{ijk}^2} - 2r_{ij} + \frac{c'}{\sum_{k=1}^c ((w_{ijk})^2 + (x_{ijk})^2)} \right]$$

The standard deviation of r_{ij} is $\sigma(r_{ij}) = \sqrt{v(r_{ij})}$

4. Test for Significant Difference in Coverage Rates

We tested the null hypothesis H_0 that there was no significant difference in the coverage rates p_{ij} and p_{j1} versus the alternative H_1 that the difference was significant. This can be denoted as follows for the observed and extreme rates.

Observed Estimate $H_0 : p_{ij} - p_{j1} = 0$
 $H_1 : p_{ij} - p_{j1} \neq 0$

Extreme Estimate $H_0 : p_{ij}^* - p_{j1}^* = 0$
 $H_1 : p_{ij}^* - p_{j1}^* \neq 0$

To perform the test the difference was standardized by dividing by the standard deviation of r_{ij} . The resulting Z values were compared to the value for a two-tailed test with 90 percent confidence (1.645) in the standard normal table. If the absolute value of Z is greater than 1.645, we reject the null hypothesis, i.e., the difference is significant.

The Z values, for a pair of lists i and j, were denoted as follows for the observed and extreme estimates respectively.

$$Z_{ij} = (p_{ij} - p_{j1}) / \sigma(r_{ij})$$

$$Z_{ij}^* = (p_{ij}^* - p_{j1}^*) / \sigma(r_{ij}^*)$$

The results show for each bid group that, even using the extreme estimate, the list with the highest number of valid addresses was significantly better than the other list(s) in every bid group except 13. For bid group 13 lists 1 and 3 were similar using both the observed and extreme estimates (i.e., $|Z_{1j}|$ and $|Z_{1j}^*|$ were less than 1.645). No comparison was done in bid group 21 since only list 2 supplied addresses.

C. Estimation Procedure for Quality

In measuring the level of quality for each list by bid group, two characteristics were used.

- The number of listings identified as deliverable or between list duplicate (from the USPS check) as a percentage of the total list size.
- The number of listings at multiunit addresses with an apartment designation as a percentage of the number of listings at multiunit addresses on the list.

The following estimates were used in determining the quality of each list.

1. Deliverable and Between List Duplicate Listings

For a given bid group, let:

g_i = the number of within list duplicates on list i determined from the computer or clerical matches.

u_i = the number of listings sent to the USPS check on list i .

o_i = the number of listings on list i checked-in after the USPS check.

$(d_i + b_i)$ = the number of listings on list i checked-in as deliverables or between list duplicates after the USPS check.

$(g_i + u_i)$ = the total number of listings supplied on list i

The estimate of the percentage of deliverable listings in list i is:

$$t_i = \frac{\frac{(d_i + b_i)}{o_i} \cdot u_i}{(g_i + u_i)}$$

$$= \frac{(d_i + b_i) u_i}{(g_i + u_i) o_i}, \text{ so } 0 \leq t_i \leq 1$$

The larger the value of t_i , the better the quality of the list. Note that $(1 - t_i)$ is the estimate of the percent of listings on list i which are not deliverable.

2. Apartment Designation

Let:

a_i = the number of listings in list i at multiunit addresses with a supplied apartment designation.

h_i = the number of listings in list i at multiunit addresses.

The estimate of the percentage of multiunit listings with an apartment designation in list i is:

$$s_i = \frac{a_i}{h_i}, \text{ so } 0 \leq s_i \leq 1$$

The larger the value of s_i , the better the quality of the list. Note that $(1 - s_i)$ is the estimate of the percent of multiunit listings on list i with no apartment designation.

D. Awarding of Points for the Evaluation

The vendors were compared based on several factors. As set forth in the RFP Solicitation Number 52-SOL-7-66045 section M.3 (date issued April 17, 1987) points were assigned to the factors based on their relative importance as follows:

- Coverage / Quality (85)
- Company Experience (10)
- Key Personnel (5)

Since coverage is the foremost characteristic of an address list, 75 points were assigned to coverage and 10 points were allocated for quality. The following describes the method used to assign these points based on the results of the evaluation. Note that the best list(s) for a given factor received full credit.

1. Coverage - The equation used to assign points for coverage is described below. A similar method was used in the 1980 Census Residential Mailing List Evaluation (Attachment 3 is taken from the June 23, 1978 memorandum from Sheldon A. Rubin to James H. Dolvin, "Report on Partial Scoring - RFP 7-35030").

Assume list i has the best observed coverage $p_{i,j}$. The number of points (W) for each list were assigned as follows:

$$W_i = 75$$

$$W_j = \begin{cases} 75 + \frac{p_{j,i} - p_{i,i}}{p_{i,i}} e^{-(Z_{i,j} / b)} & \text{if } Z_{i,j} > 1.645 \\ \text{or} \\ 75 & \text{if } 0 \leq Z_{i,j} \leq 1.645 \end{cases}$$

Thus, if the difference in coverage between list i and j was not significant at the 90 percent confidence level, both lists i and j received full credit. This occurred only for lists 1 and 3 in bid group 13.

To determine the values of b and c the following criteria were used.

$$\text{Let } F = e^{-(Z_{i,j} / b)}$$

The factor F was used to penalize lists that had significantly lower coverage (based on the observed estimate) than the "best" observed list at a given confidence level. The penalty increased exponentially as the level of confidence increased. The value $(1 - F)$ indicates the penalty as a percentage. The penalty factor was developed in the same fashion as in the 1980 Census Residential Mailing List Evaluation.

For a significant difference in coverage at the 90 percent confidence level, the desired penalty was 10 points of the 75. At the 99.99 percent confidence level, the desired penalty was 99 percent (74.25 points). If the coverage difference was not significant at 90 percent level, no penalty was applied. This information is summarized in Table 2.

Table 2

Z_{1j}	Selected Confidence Levels	Penalty in points	Penalty in percent	F
Less than 1.645	Less than 90.00 percent	0.00	0.00	1.0000
1.645	90.00 percent	10.00	13.33	0.8667
3.890	99.99 percent	74.25	99.00	0.0100

Using the values of Z_{1j} and F from the above table, the following equations are produced.

$$-(1.645/b) = 0.8667 = e$$

$$-(3.890/b) = 0.0100 = e$$

From these equations the values of b and c were determined to be:

$$b = 2.66 \text{ and } c = 4.03$$

Note that the values of Z_{1j} , p_{1j} , and p_{ij} produced from the extreme estimate were not used in assigning coverage points. These values would increase the number of points given to list j and, as a result, actually penalize list i. However, the analysis showed that this increase would not be significant.

2. Quality - 10 points total

The two characteristics described in Section II.C. were used to measure the quality of the lists. Since it is harder to identify deliverable and duplicate listings than blank apartment fields, 8 of the 10 points were allocated to this part of quality. The remaining 2 points were assigned to apartment designation.

a. Deliverable and Between List Duplicate Listing

- Assume that list i has the highest t_i value. The number of points (W) for each list were assigned as follows:

$$W_1 = 8$$

$$W_2 = 8 \times \frac{t_2}{t_1}$$

b. Apartment Designation

- Assume that list i has the highest s_i value. The number of points (W) for each list were assigned as follows:

$$W_1 = 2$$

$$W_2 = 2 \times \frac{s_2}{s_1}$$

3. Company Experience and Key Personnel

The points for company experience and key personnel were awarded based on the information each vendor supplied.

cc: STSD 1990 Decennial Census Memorandum Series Distribution List and

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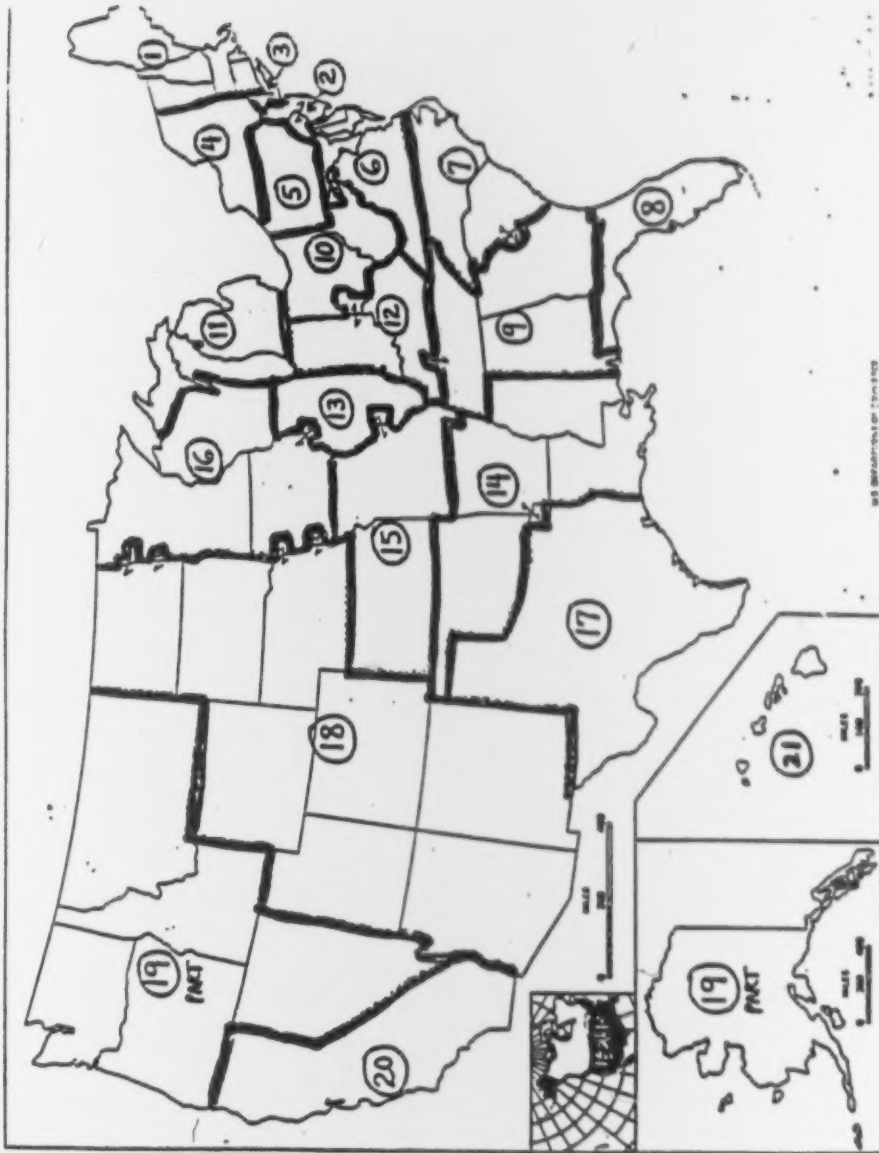
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1990 VENDOR LIST EVALUATION GROUPINGS

Attachment 1
Page 1 of 2

	<u>1980 UA/SMSA POP (Thousands)</u>
1. CT; ME; MA; NH; RI; VT	7906
2. NJ; Philadelphia TAR Counties in PA	9713
3. New York and Nassau-Suffolk TAR Counties in NY	10673
4. Balance of NY	3119
5. Balance of PA	3456
6. DE; MD; DC; VA	7191
7. NC; SC, Augusta TAR Counties in GA	3314
8. FL	7304
9. AL; TN; Balance of GA; Clarksville-Hopinsville TAR Counties in KY	6021
10. Balance of OH; WV	5264
11. MI	5779
12. IN; Balance of KY; Cincinnati, Dayton, Hamilton, and Springfield TAR Counties in OH	4320
13. Balance of IL	7780
14. MS; LA; AR; OK; Texarkana TAR Counties in TX	4517
15. KS; MO; St. Louis TAR Counties in IL	3771
16. WI; Balance of MN; Balance of IA; Davenport TAR Counties in IL	5279
17. Balance of TX	9087
18. AZ; NM; UT; CO; WY; ND; SD; NE; Sioux City and Omaha TAR Counties in IA; Fargo and Grand Forks TAR Counties in MN	6476
19. MT; ID; NV; WA; OR; AK	4886
20. CA	19771
21. HI	688

1990 VENDOR LIST EVALUATION GROUPINGS



A	Number of Carrier Routes				
	B	C	D	E	E/D
Bid Group	in Group	in Sample	Returned	Returned & ≥ 125	As a Percent of Returned
1	7178	424	376	373	99.2
2	8186	430	345	339	98.3
3	7422	428	335	324	96.7
4	2827	435	393	381	96.9
5	3495	428	352	348	98.9
6	5785	428	321	317	98.8
7	2253	426	374	367	98.1
8	4794	431	398	393	98.7
9	4504	433	401	399	97.0
10	4566	426	399	393	98.5
11	4651	424	395	391	99.0
12	4657	437	388	380	97.9
13	4248	428	396	389	98.2
14	3594	429	359	354	98.6
15	3751	433	405	391	96.5
16	4482	432	386	374	96.9
17	8251	433	304	295	97.0
18	6197	435	373	364	97.6
19	4269	432	368	359	97.6
20	18003	427	365	361	98.9
21	403	412	305	271	88.9

Weighting Procedure for Award of Coverage Points

A procedure was developed to award between 0 and 80 points for coverage based on two criteria for each of the 17 SWSA groups:

1. Actual coverage rates, and
2. A penalty for deviation from the best coverage.

The procedure awards points proportional to coverage rate with an increasing penalty for increasing deviation from the best coverage. The penalty increases sharply for vendors beyond the 95% confidence interval of the best coverage. The formula used is

w = awarded points for a vendor

$= 80 F_1 F_2$

where 80 = maximum number of points,

$F_1 = \frac{p}{p(\max)}$, the proportionality factors for estimated coverage rate,

p = actual coverage for a vendor

$p(\max)$ = best coverage in the group,

$F_2 = \exp [-(x / b)^c]$,

b, c = parameters computed to fix the penalty for the 95% confidence level at 12% and for the 99.99% confidence level at 99%. This makes $b=2.98$ and $c=5.04$.

x = standard deviation equivalent

The resulting F_2 's are:

<u>x</u>	<u>Selected Confidence Levels</u>	<u>Penalty(%)</u>	<u>F_a</u>
0		0	1.00
1		0	1.00
2	95%	12	.88
3		64	.36
4	99.99%	99	.01
5		100	0



ATTACHMENT 5

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

MAY 10 1989

1990 DECENNIAL CENSUS
PRELIMINARY RESEARCH AND EVALUATION MEMORANDUM NO. 9

Prepared by: James B. Treat *Bob Edison for JT*
Statistical Support Division

Subject: Historical and Preliminary Information Pertaining
to the 1990 Census Mailing List Evaluation.

The attached memorandum reports the results of research
undertaken by Census Bureau staff.

Attachment

NOTE: The data in this report are preliminary and tentative in nature. Users of the results memoranda should understand that these documents are prepared for internal office use, with the aim of circulating information among Census Bureau staff members as quickly as possible. These memoranda, therefore, do not undergo the careful review and clearance normally associated with published census documents. Conclusions and recommendations contained herein essentially reflect the thoughts of certain staff members at the time of publication and should not be interpreted as statements of Census Bureau position.



UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

April 11, 1989

STSD 1990 DECENNIAL CENSUS MEMORANDUM SERIES #AA-14

MEMORANDUM FOR: The Record

FROM: James B. Treat *J.B.T.*
Census Evaluation Branch
Statistical Support Division

SUBJECT: Historical and Preliminary Information Pertaining to
the 1990 Census Mailing List Evaluation.

I. INTRODUCTION

This memorandum describes the initial steps involved in the sample design and implementation of the 1990 Mailing List Evaluation (MLE). Also included is a brief discussion of the 1980 MLE and the 1984 Address List Compilation Test (ALCT). The methodology used in the 1990 MLE was already documented in the memorandum #AA-12 dated April 4, 1988 in this series.

II. MAILING LIST EVALUATION FOR THE 1990 CENSUS

A. Background

The mailing list evaluation for the 1990 census involved a comparison of commercial lists based on various factors. Each factor was assigned a point value which indicated its importance relative to the other factors. The factors and their point value were as follows:

1. Coverage (80 points): The completeness of the address list based on a match of a sample of the list to an independent address inventory.
2. Quantity (50 points): The number of tape address registers (TAR) areas and the number of addresses represented on the vendor list.
3. Carrier Route Coverage (10 points): The presence and quality of carrier route designations within ZIP Codes.
4. Demonstrated Capability (20 points):
 - a. Company Experience (10 points): The experience of the vendor in supplying comprehensive address lists.
 - b. Key Personnel (10 points): The experience and expertise of the company's key personnel in supplying such lists.
5. Cost (40 points): The price per address.

The maximum number of points was 200.

B. Sample Design for Estimation of Coverage

To conduct the 1980 coverage evaluation, each vendor listed specific TAR areas for which their address list would be provided. The 276 TAR areas in the United States (circa 1975) were then stratified into 18 groups based on list availability by vendor, 1970 housing unit count, and geography.

To estimate the coverage of the address lists, it was necessary to match the vendor lists to an independent address source. This independent source was compiled from sample addresses in TAR areas whose existence was verified by the Census Bureau's Current Population Survey (CPS). The sample of addresses for CPS are comprised of compact clusters of 4 adjacent housing units. There were 44 TAR areas not represented by sample addresses from the CPS, so these TAR areas were not involved in the estimation procedure (see Section II.C.) and any results obtained from the evaluation were not applicable to these TAR areas. However, since no viable options were available, the results for a given TAR group were applied to all TAR areas in the group regardless of representation by the CPS.

The approximate target size of the CPS list for a given TAR group was calculated as follows:

Assume that -

1. the presence of a specific address on a given vendor list is uncorrelated with the presence of the address on another list,
2. the probability of the address being in a given list is the same for each TAR area in the group, and
3. the addresses are selected within the TAR area using simple random sampling.

Let $\hat{p}_1$ = the sample estimate of P_1 , the true coverage rate for vendor list 1. Ignoring the finite population correction factor, an expression for the variance of the difference between the rates for two vendor lists is

$$\text{Var}(\hat{p}_1 - \hat{p}_2) = \text{Var}(\hat{p}_1) + \text{Var}(\hat{p}_2)$$

$$= \frac{1}{n} [P_1(1 - P_1) + P_2(1 - P_2)] \quad \text{where}$$

n = the required sample size of addresses. Thus,

$$n = [P_1(1 - P_1) + P_2(1 - P_2)] / \text{Var}(\hat{p}_1 - \hat{p}_2).$$

The desired sample size was to ensure that a difference of 3

percent or more between the lists with the best and next best coverage rates would be significant at the 95 percent confidence level. This produced the following equation:

$$1.96 \sqrt{\text{Var}(\hat{p}_1 - \hat{p}_2)} = 0.03 \quad \text{or} \quad \text{Var}(\hat{p}_1 - \hat{p}_2) = 2.34 \times 10^{-4}.$$

Values of around 85 percent were used for the best coverage rates based on the results of the mailing list evaluation for the 1970 census. This produced a desired sample size of 1,200 addresses or 300 address clusters which was used in all but two TAR groups. These two groups contained the largest TAR areas, so the sample size was doubled to produce estimates with smaller standard errors.

Within each TAR group, a list of the unique street (including name, prefix, suffix, and type) and ZIP Code combinations represented by the CPS sample addresses was compiled. Each vendor was asked to supply all addresses in its file for each of the street and ZIP Code combinations. Independently for each vendor, the address list was compared to the CPS sample addresses.

Due to estimated coverage rates that were much lower than the 85 percent experienced in the 1970 evaluation (see Section II.D), street and ZIP Code combinations for which one or more vendors did not supply addresses were compared to information on the most current address listing sheets used by CPS interviewers to determine if corrections were necessary. Each vendor was then given a new list of the combinations (including any corrections) for which it initially did not provide any addresses. The vendor was asked to supply the addresses in its file for the new list of street and ZIP Code combinations and to indicate why these addresses were not provided with the initial set of addresses. The vendor addresses supplied as a result of the second request were then compared to the CPS sample listings.

C. Estimation Procedure

Since the CPS is a stratified systematic sample of housing unit clusters, an unbiased estimate of the coverage rate for a given vendor and TAR group can be calculated. The sampling rates for the CPS varied between counties within a TAR area and between two types of housing unit clusters (essentially, those on the 1970 census list and those built after the 1970 census), so these were accounted for in the estimation procedure. The unbiased estimate $\hat{p}$ of the true coverage rate p for a given vendor and TAR group is

$$\hat{p} = \frac{\sum_{h=1}^H \sum_{i=1}^L \sum_{j=1}^C \frac{N_{hij} X_{hij}}{n_{hij}}}{\sum_{h=1}^H \sum_{i=1}^L \sum_{j=1}^C N_{hij}} \quad \text{where}$$

$$N = \sum_{h=1}^L \sum_{i=1}^{C_h} \sum_{j=1}^J N_{hij} = \text{housing unit count in the TAR areas represented by the CPS,}$$

L = number of TAR areas represented by the CPS in the group,

C_h = number of counties in TAR area h ,

j = index for type of housing unit cluster,

N_{hij} = housing unit count of type j in county i within TAR area h ,

n_{hij} = sample size from the CPS of type j in county i within TAR area h ,

X_{hij} = number of the N_{hij} that were on the vendor list.

The estimator used for the variance of $\hat{p}$ was that for simple random sampling without replacement, namely

$$v(\hat{p}) = \frac{1}{N^2} \sum_{h=1}^L \sum_{i=1}^{C_h} \sum_{j=1}^J \frac{N_{hij} (N_{hij} - n_{hij})}{n_{hij} - 1} \frac{X_{hij} (n_{hij} - X_{hij})}{n_{hij}^2}$$

The values of $\hat{p}$ and $v(\hat{p})$ were used to compare each pair of vendor lists in a given group.

D. Results of the Coverage Evaluation

The highest estimated coverage rates by TAR group from the initial match of the vendor samples to the CPS addresses ranged from 55.8 to 75.9 percent (standard errors on these percents were about 1 percent). After the vendors supplemented their samples to account for corrected street and ZIP Code combinations, the highest estimated coverage rates ranged from 64.3 to 84.7 percent (standard errors were about 1 percent). While the supplementary match increased the estimated coverage rates considerably, even these were in most cases much lower than the anticipated 85 percent levels. It should be noted that for some TAR groups the list with the highest estimated coverage rate did not win the award because the list did not contain unit designations. Table 1 represents a summary of results from the 1980 MLZ. The table shows by the TAR group, vendor availability, number of TAR areas, number of TAR areas in CPS, and highest coverage rate for any vendor in the TAR group separately for the initial and final match. Note that the numeric TAR group code (1-8) refers to the vendor availability. The alphabetic code reflects further stratification of TAR areas based on 1970 housing unit counts and geography.

Table 1: Summary of the Results for the 1980 Mailing List Evaluation

TAR Group	Vendor	Number of TAR Areas	TAR Areas in CPS	Highest Estimated Coverage Rate After	
				Initial Match	Final Match
1a	1,2,3,4	13	13	71.1 (1.1)*	80.3 (0.9)*
1b	1,2,3,4	14	14	71.9 (1.1)*	78.9 (0.9)*
2a	1,2,3	17	17	75.5 (1.1)*	80.2 (1.0)*
2b	1,2,3	16	16	61.8 (1.1)*	74.7 (1.0)*
2c	1,2,3	25	23	71.5 (1.0)*	77.0 (1.0)*
2d	1,2,3	4	4	72.6 (0.8)*	79.4 (0.7)*
2e	1,2,3	11	7	75.9 (1.1)*	80.8 (1.0)*
3	1,2,4	5	5	70.2 (1.1)*	78.3 (1.1)*
4a	1,3,4	22	15	70.4 (1.1)*	81.2 (1.0)*
4b	1,3,4	21	18	72.7 (1.0)*	76.9 (1.0)*
5a	1,3	4	4	60.0 (0.8)*	64.2 (0.8)*
5b	1,2	18	18	65.9 (1.0)*	81.0 (0.9)*
6a	1,3	9	8	74.8 (1.1)*	80.9 (1.0)*
6b	1,3	38	21	73.7 (1.0)*	81.6 (0.9)*
6c	1,3	19	11	75.7 (1.2)*	82.4 (1.1)*
6d	1,3	17	15	55.8 (1.2)*	67.7 (1.2)*
7	1,4	5	5	71.6 (1.2)*	84.7 (1.0)*
8	1	18	**	**	**
Total		276	214		

* The estimated coverage rate and standard error on the estimated coverage rate (in parentheses) are shown as percentages of the total list.

** Note only one vendor bid on the TAR areas in group 8. It was not necessary to include this group in the evaluation.

Since not all of the TAR areas are in the CPS, the 1980 MLE was confined to the 214 TAR areas. A list of the TAR areas by group is included in this memorandum in Attachment 1.

2. Awarding of Points for the Evaluation

1. Coverage

A procedure was developed to award between 0 and 80 points for coverage based on two criteria for each of the 18 TAR groups:

- Actual coverage rates, and
- A penalty for deviation from the best coverage.

The procedure awarded points proportional to coverage rate with an increasing penalty for increasing deviation from the best coverage.

The penalty increased sharply for vendors beyond the 95 percent confidence interval of the best coverage. The formula used was

w = awarded points for a vendor = $80 F_1 F_2$, where

80 = maximum number of points,

$F_1 = \frac{\hat{p}}{\hat{p}(\max)}$ = the estimated coverage of the list relative to that for the best list,

$\hat{p}$ = estimated coverage for a vendor in a given TAR group,

$\hat{p}(\max)$ = highest estimated coverage rate in the group,

$F_2 = \exp [-(x / b)^c]$,

b and c are parameters computed to fix the penalty for the 95 percent confidence level at 12 percent and for the 99.99 percent confidence level at 99 percent. Thus, $b=2.98$ and $c=5.04$.

x = standard deviation equivalent calculated between the given list and the list with the highest estimated coverage rate.

Table 2 below show the values of F_2 resulting from various values for the standard deviation.

Table 2: Penalty for Less than the Best Estimated Coverage

Standard Deviation(x)	Selected Confidence Levels	Penalty(t)	F_2
0		0	1.00
1		0	1.00
2	95.00 percent	12	0.88
3		64	0.36
4	99.99 percent	99	0.01
5		100	0.00

2. Quantity

The quantity points were allocated by multiplying the vendor's coverage rate estimate by 50, the maximum point total.

3. Carrier Route

Vendors were given full credit (10 points) if they provided their addresses by carrier route. If they could not they received 5 points.

4. Demonstrated Capability

Vendors received full credit (20 points) for each group in which they competed if they supplied their addresses on time and in an acceptable format.

5. Cost

The cost points (maximum of 40) were awarded based on the relative price per address stated by vendor. The minimum award for cost was 5 points.

F. Awarding of the Contracts

For the 1980 Decennial Census, ADVO-Systems, Inc., was awarded the contract for 16 TAR groups representing 240 areas. W.A. Storing Company won the contract for the other 2 groups containing 36 TAR areas. The lists from the R. L. Polk Company were also purchased for 2 of the TAR groups awarded to ADVO-System, Inc. to supplement that list.

G. Problems Encountered During the Evaluation

The problems described below occurred during the evaluation of the vendor address lists. The problems can be classified into three categories; those due to the vendor lists, those due to the estimation procedure, and those due to the CPS file. Some of these are described in reference 1/.

1. Problems With the Vendor Address Lists

- a. Of the seven vendors that expressed interest in the contract, one did not meet the specified terms, two did not contain any unit designations for addresses at multiunit basic street addresses (BSAs), and three lacked these unit designations for some but not all TAR areas in which they competed. The unit designations were required by the Bureau to distinguish addresses at multiunit BSAs.
- b. For some core urban areas the address lists had not been updated for quite some time. There was no incentive for the vendors to improve their lists in areas such as these where a large proportion of the people live in poverty because the vendors were usually employed to conduct

mailings for commercial purposes.

- c. The coverage and quality of the address lists were less than anticipated. The expected housing unit count in TAR areas was 52 million and the vendors supplied 43 million unique addresses (83 percent estimated coverage rate) and 5 million duplicates (12 percent of the lists). The lack of unit designations previously mentioned was another indication that the quality of the lists was less than expected.
- d. In an effort to increase the coverage of the vendor lists after the contracts were awarded, one of the following actions were taken for certain TAR areas where the purchased list had low estimated coverage.
 - 1) For one TAR area the purchased vendor list had a much higher estimated coverage rate than the vendor lists that were not purchased. The 1970 census list was the only source that had a high enough coverage rate to be useful as a supplement to the purchased vendor list. The purchased vendor list was merged with the 1970 census list for the central city portions of this TAR area. The combined list was then processed to identify and remove duplicate listings.
 - 2) The vendor list for 30 TAR areas was first updated by the United States Postal Service (USPS) to identify missing, nonexistent, and duplicate addresses as well as those that required corrections. The coverage rate was still lower than those of the vendors who were removed from consideration for the award because they had incomplete addresses (i.e., they lacked unit designations). The Bureau purchased lists from two vendors (the awarded vendor and the vendor with the best coverage but which lacked unit designations) in order to improve the coverage. The basic street addresses on the vendor list with the best coverage that contained incomplete addresses were compared to those on the list with complete addresses. The nonmatches were then added to the vendor list with complete addresses.

2. Problems With the Estimation Procedure

The vendor addresses were compared to CPS sample addresses to determine coverage. This may not be the most appropriate comparison procedure since

- a. the vendors sort their files by ZIP Code and carrier route number whereas the CPS sample was defined by street and ZIP Code. The vendors may have had difficulty in stripping off their addresses for specified street and ZIP Code combinations;

- b. the CPS is conducted by personal interview so the addresses do not form a mailing list;
- c. only about 78 percent of the TAR areas were represented by the CPS sample.

For these reasons the estimated rates for the evaluation were lower than anticipated.

3. Drawbacks with Using the CPS File

- a. The existence of the CPS addresses was verified by interviewers 16 months or more before the addresses were available for this evaluation. A significant number of CPS addresses could have become invalid in that time due to demolitions or corrections.
- b. The CPS addresses were not contained in a computer file so the cost of keying the CPS sample had to be incurred to conduct the evaluation.

As described in Section IV, the evaluation for the 1990 census was redesigned to overcome the problems experienced in 1980.

III. 1984 URBAN ADDRESS LIST COMPILATION TEST

Examination of the results of the 1980 census prompted questions concerning the cost and accuracy of address list compilation. In particular, the Bureau of the Census was interested in improving the update procedures and in re-evaluating the entire rural methodology for address list compilation and questionnaire delivery. The United States General Accounting Office (GAO) recommended that the Bureau of the Census consider having the USPS prepare the initial address list for TAR and Prelist areas (see reference 2/). In addition, the GAO suggested that the 1980 census list could be used as the initial address source for 1990. This was the basis for the 1984 ALCT. This test compared several combinations of address list development techniques and list update procedures in TAR and Prelist areas.

The discussion in the following sections is restricted to the ALCT for TAR areas. Detailed accounts of the ALCT are provided for the TAR and Prelist test areas in references 1/ and 4/, respectively.

A. Background

The purpose of the urban ALCT was to compare three initial address list sources based on coverage and cost. The address list sources were

- 1. A vendor or commercial mailing list;
- 2. A list to be created by the U.S. Postal Service; and
- 3. The 1980 census address files.

Since none of the list sources could be assumed (and rightfully so) to have perfect coverage, it was necessary to compare the list sources in conjunction with two procedures used to update address lists. The update operations identify duplicate and undeliverable addresses as well as addresses that are not on the list. Thus, the overall effect of an initial list source on address list compilation could only be studied after completion of the update operation. For example, it was known that the vendor list by itself would not provide as much coverage as the USPS or the 1980 lists. The vendor list was however, relatively inexpensive to acquire when compared to the 1980 list or the USPS list. Therefore, an updated vendor list could provide similar coverage at less expense than either the updated 1980 census list or the updated USPS list.

The urban ALCT was conducted in two TAR areas - Bridgeport and Hartford, Connecticut. For Hartford, all three initial lists were compiled and updated by a Precanvass operation during which census enumerators canvassed the city. For Bridgeport, the vendor and the 1980 lists were compiled and updated separately by a USPS Casing Check and a Precanvass. Thus, there were four separate updated initial lists to compare. The design is depicted in Table 3.

Table 3: Design of the Urban Address List Compilation Test

Address List Source/Update	T E S T S I T E	
	Hartford	Bridgeport
	Vendor/Precanvass 1980/Precanvass USPS/Precanvass	Vendor/Precanvass Vendor/Casing Check 1980/Precanvass 1980/Casing Check

As indicated in Table 3, the USPS did not update its own initial list. This was built into the design since it was unlikely that the carriers would make many changes to a list that they had recently compiled. Thus, comparison of an address list created and updated by the same source (the USPS) to a list that was compiled by one source and updated by another did not seem to be appropriate.

Hartford and Bridgeport were selected as the test sites since the two cities were similar with respect to the following demographic characteristics:

1. A large number of multi-unit BSAs with 2-9 units;
2. A large proportion of Black and Hispanic persons in the population;
3. A significant group quarters population that contained non-inmate persons; and
4. Substantial population growth between 1970 and 1980 and a significant number of housing units constructed after 1980.

Therefore, it might have been possible to make additional comparisons between the two test sites (e.g., the 1980 and Precanvass tandem in Hartford with the vendor and Casing Check combination in Bridgeport).

The updated lists were compared based on cost and a measure of relative coverage. The coverage measures were obtained by comparing the updated lists in terms of the total number of addresses for valid housing units in each list. Addresses were considered to be valid if they were located within the test area and were used for residential purposes. Validity was determined in two steps. First, the updated lists were matched. For this match all units at a BSA were considered to be matched lists when the BSA was included on each list and the number of units at the BSA was the same. Those addresses which were classified as matches were considered to be valid. The second step was a field reconciliation operation in which the validity status of units which did not match was determined. Thus, if two updated lists had the same coverage they would have the same number of valid units. These measures of coverage obtained from the total count of valid units were used to compare the updated lists for coverage. This approach was used instead of a direct unit-by-unit match of the lists due to cost and timing considerations and because measures of relative coverage are sufficient for the test requirements.

B. Results

1. Hartford

The comparison of the three initial and updated lists for Hartford is shown in Table 4.

Table 4: Overall Coverage of Housing Units in Hartford; By List Source and Before/After Updating

List Source	INITIAL LIST		UPDATED LIST	
	Total Units	Valid Units	Total Units	Valid Units
Vendor	50,634	48,640	55,384	52,580
USPS	54,313 (7.3%)*	49,988 (2.8%)*	58,488 (5.6%)*	53,422 (1.6%)*
1980 census	54,268 (7.2%)*	50,752 (4.3%)*	57,620 (4.0%)*	53,452 (1.7%)*

* The figures in parentheses in Table 4 for the USPS and 1980 census list sources indicate the percent increase over the vendor file.

Several observations can be made from the data in Table 4.

- a. In terms of total housing units, the coverage of the initial lists from the USPS and 1980 census was better than that for the vendor list. This was an expected result. There is little incentive for address vendors to include vacant units on their lists since their clients are interested in reaching persons by mail. Since the USPS want door to door to create its lists, the USPS list probably had better coverage of vacants. In the 1980 census, housing unit adds from the coverage improvement operations represented an estimated 10 percent of the housing unit inventory and a large proportion of these adds were vacant in the census.
- b. The Precanvass updating operation improved all three lists. After updating, both the 1980 census and the USPS lists had slightly more valid units and more invalid listings than the vendor.
- c. The 1980 census list had the highest count of valid units both before and after updating. However, the increase after updating is trivial when compared to the USPS list. The 1980 list also had fewer invalid units than the USPS list both before and after updating.

Table 5 provides cost data for the development of the three lists for Hartford.

Table 5: Cost of Address List Compilation for Hartford

List Source	Cost for the Initial List	Cost for Updating	Total Cost	Overall Cost Per Valid Unit
Vendor	\$ 2,560	\$33,710	\$36,270	\$0.69
USPS	\$53,026	\$33,710	\$86,736	\$1.62
1980 Census	\$ 8,250	\$33,710	\$41,960	\$0.79

The data in Table 5 show that the USPS address list was more expensive to compile than either the 1980 census or the vendor lists. Note that updates to the 1980 vendor list from the coverage improvement operations were not available on a computer file, so these had to be keyed to produce the 1980 census list. The cost for this keying operation is included in the initial cost for the 1980 census list for both Hartford and Bridgeport.

2. Bridgeport

The figures in Table 6 show the results of the Bridgeport

portion of the urban ALCT. The vendor and 1980 census lists were independently updated by a USPS Casing Check and by a census Precanvass operation. These lists are referred to as Vendor/CC, Vendor/PC, 1980/CC, and 1980/PC, respectively, in the following tables.

Table 6: Coverage of Housing Units in Bridgeport: By List/Update Combination and Before/After Updating

List Source	INITIAL LIST		UPDATED LIST	
	Total Units	Valid Units	Total Units	Valid Units
Vendor/CC	48,667	47,293	51,289	49,399
Vendor/PC	48,667 (-)	47,293 (-)	52,825 (3.0%)	50,527 (2.3%)
1980/CC	52,017 (6.9%)	49,114 (3.9%)	53,938 (5.2%)	50,816 (2.9%)
1980/PC	52,017 (6.9%)	49,114 (3.9%)	54,966 (7.2%)	51,128 (3.5%)

The following observations can be made from the data presented in Table 6.

- The 1980 list had better coverage than the vendor list before updating. This result was also observed in Hartford.
- Both the casing check and Precanvass updating procedures reduced the differential in coverage that existed between the initial lists, but the Precanvass was more successful in this endeavor.
- As was the case for Hartford, the more complete updated list was produced from the more complete initial list (1980).

Table 7 supplies the cost data for Bridgeport.

Table 7: Costs of Address List Compilation for Bridgeport

List Source	Cost for the Initial List	Cost for Updating	Total Cost	Overall Cost Per Valid Unit
Vendor/CC	\$2,885	\$ 1,258	\$ 4,143	\$0.08
Vendor/PC	\$2,885	\$33,708	\$36,593	\$0.72
1980/CC	\$8,250	\$ 1,258	\$ 9,508	\$0.19
1980/PC	\$8,250	\$33,710	\$41,960	\$0.82

Table 7 shows that purchasing a vendor list and then updating it through a Casing Check is much less expensive than any of the other procedures (as noted above, however, this initial/update combination provided less coverage than the other techniques). Also, the cost of the Precanvass in Bridgeport also can be seen to closely parallel the Hartford results for the 1980 and vendor lists.

C. Conclusions

The results of the urban ALCT were used to formulate the following conclusions.

1. The ALCT results showed that the initial address list sources were similar in terms of coverage. However, it must be noted that the USPS list was more expensive to compile than the other two lists.
2. The vendor list was the least expensive and had the fewest invalid listings in both Hartford and Bridgeport, but it also had the lowest coverage after application of one update procedure. However, estimates from the 1980 census indicated that, after the vendor address list had been processed through all of the update (coverage improvement) operations, the coverage of the final census address list was very good (an estimated one percent undercoverage of occupied housing units and left little room for improvement (see reference 2/)). The combined use of the vendor list updated by the USPS checks and the census Precanvass produced a very accurate address list.
3. While the 1980 census list fared well in comparison to the USPS and vendor lists for Hartford and Bridgeport, this does not imply that this list should be used in 1990. Hartford and Bridgeport are areas which have experienced moderate to low growth in population. The Bureau has serious reservations concerning the accuracy and completeness of the 1980 list for use as the source list in 1990 for high growth areas. At that time the 1980 list will be about ten years out of date whereas for the ALCT the list was only four years old. The ALCT results do indicate that for areas where vendor lists are found to be of suspect quality or completeness, the 1980 list is a viable substitute for the vendor list. In addition, there may be significant planning, control, and operational risks associated with changing the basic methodology of census address list development from one that utilizes a vendor address list to one that is based on a new list creation procedure such as the USPS list.

The coverage and cost data resulting from the urban ALCT indicate that the address list compilation procedure for TAR areas in 1990 should remain much the same as that used in 1980. The 1980 census list remains an alternative list source for any TAR area where the vendor list is identified to have deficiencies.

IV. MAILING LIST EVALUATION FOR THE 1990 CENSUS

A. Background

The evaluation of address lists for the 1990 census compared the vendor lists with respect to several factors. A brief description of the factors and their respective point values are given below.

1. Coverage (75 points); Coverage pertains to the completeness of the address list based on the estimated number of valid addresses in the list.
2. Quality (10 points); Quality refers to the utility of the address list in terms of the percentage that are recognized by the USPS and the percentage of listing for units at multiunit BSAs which have unit designations.
3. Demonstrated Capability (15 points); Consisting of Company Experience and Key Personnel. These factors were evaluated based on information supplied by the vendor that detailed the experience of the company and of its key staff members in supplying comprehensive address lists.
4. Cost (50 points); The price per address to procure the address list was used to award points for cost.

The maximum number of points was 150.

In 1980 the vendor lists were also evaluated based on Quantity and Carrier Route Coverage. These characteristics were not evaluated separately in 1990 because they were involved to some degree in the evaluation of list coverage as described below.

B. Alternatives for Evaluation of Coverage

The Bureau of the Census wanted to design the evaluation of the vendor address lists in such a way that the problems experienced in 1980 would be avoided. Many of the difficulties faced in 1980 were due to the following:

- The CPS sample may not have been the most appropriate list to determine the coverage of vendor lists since the CPS addresses were not used for mailing purposes, had their existence verified at least sixteen months before the evaluation started, and did not represent all TAR areas;
- The vendor lists were organized by ZIP Code and carrier route, not by street and ZIP Code as were the CPS addresses. For this reason, the vendors may have had a difficult time supplying the appropriate addresses.

To overcome these problems, the Bureau decided to base the evaluation of coverage on the vendor addresses supplied for a sample of carrier routes within ZIP Codes. Given this, three methods of conducting the coverage evaluation were identified.

1. Match the sample vendor lists to a sample of CPS addresses in a procedure similar to that used in 1980. In addition to many of the drawbacks described in Section II, each CPS address would have to be matched to the Carrier Route Identification System file maintained by the USPS to determine the appropriate carrier route and ZIP Code. This procedure had not been conducted before on a large scale so the percentage of CPS addresses that would be assigned a carrier route and ZIP Code was not estimable.
2. Match the sample vendor lists to the 1980 census list. The addresses added in the coverage improvement operations (USPS checks, Precanvass, etc.) would have to be keyed and added to the vendor files used in 1980 to support this procedure. Also, files of addresses built since 1980 (which do not include unit designations for multiunit BSAs) and addresses demolished after 1980 would have to be merged with the updated 1980 list.
3. Unduplicate and merge the sample vendor lists, then have the USPS determine which addresses are deliverable. Most if not all of the vendors use the USPS to update their lists and the USPS is the best source to verify that mail can be delivered to a given address. In addition, the Bureau would request the vendors to supply the numbers of residential addresses in its list for each city delivery carrier route in a ZIP Code that was wholly or partially in a TAR area.

Due to the weaknesses of methods 1 and 2 and the strengths of method 3, the procedure involving the merging of the sample vendor lists and the USPS check was selected for use in 1990. Since this procedure did not request that the USPS estimate the number of residential addresses missing from the vendor lists, a method was needed to identify areas for which the vendor lists had severe undercoverage. The Bureau decided to compare the estimated count of valid addresses from the vendor lists (using the proportion of valids in the sample) to the number of residential stops for city delivery carrier routes on the Delivery Statistics file maintained by the USPS.

C. Sample Design for Estimation of Coverage

The United States contained 345 TAR areas when the evaluation was designed in 1986. The total number of sample carrier routes necessary to conduct an evaluation separately for each TAR area would have been excessive (see the discussion of the desired sample size later in this section). To meet the criteria of the evaluation and maintain cost at a reasonable level, the TAR areas were stratified by geography and vendor availability into 21 groups. The groups consisted of whole or partial ZIP Codes in the TAR areas. These ZIP Codes were identified by the Geography Division at the Bureau by matching the TAR area definitions to the January, 1987 version of the USPS ZIP Code file. Criteria used as guidelines to form the groups are listed below in priority order.

- o Groups should contain entire three digit ZIP Code areas.
- o Groups should contain contiguous TAR areas.
- o Groups should contain entire states.
- o Groups should represent a sufficient number of housing units so that vendors are interested in competing for the contract.

The groups are defined and displayed graphically in Attachment 2. Note that group 21 only contains Hawaii because exactly one vendor supplied a list for that state. The vendors could compete for as many groups as they wanted and the evaluation was conducted separately for each group.

The sampling frame for the evaluation was the list of city delivery carrier routes with residential addresses in ZIP Codes at least partially contained in TAR areas. The average number of residential addresses in these carrier routes was about 500. The Bureau did not want to select carrier routes that contained less than 25 percent of the average count since small carrier routes could substantially increase the between carrier route component of variance estimates.

Thus, the carrier routes were sorted by carrier route number within ZIP Code and then clustered within ZIP Code until the cluster contained at least 125 residential addresses or the entire ZIP Code was in one cluster. The carrier route cluster was the sampling unit for the evaluation.

The Bureau wanted to use a target sample size which would ensure that a difference of at least two percent between the percentages of valid addresses contained on the best and next best lists was significant at the 95 percent confidence level. To estimate the desired sample size, the following assumptions were made.

1. A simple random sample of n out of N carrier routes was selected in each TAR group.
2. The carrier routes within a group contain the same number of residential addresses. This number is denoted below as M .
3. The presence of a specific address on one vendor list was independent of its presence on another list.
4. The level of confidence in identifying the list with the best coverage was still close to 95 percent. For those TAR groups with three vendor lists, a given list was involved in two pairwise comparisons each with a 95 percent confidence level in detecting the list with better coverage.

Let P_1 be the proportion of interest for list 1, and

$\hat{p}_1$ be the sample estimate of P_1 .

Using notation similar to that in Section II and ignoring the finite population correction factor, the variance of the difference between the proportions for lists 1 and 2 for a large population of size N is

$$\begin{aligned}\text{Var}(\hat{p}_1 - \hat{p}_2) &= \text{Var}(\hat{p}_1) + \text{Var}(\hat{p}_2) \\ &= \frac{1}{nM} [1 + (M-1)\text{Rho}] [P_1(1-P_1) + P_2(1-P_2)]\end{aligned}$$

where Rho is the intraclass correlation coefficient for the addresses in the same-carrier route.

Solving for n yields the following equation:

$$n = \frac{[1 + (M-1)\text{Rho}] [P_1(1-P_1) + P_2(1-P_2)]}{M \text{Var}(\hat{p}_1 - \hat{p}_2)}$$

The 95 percent confidence interval for the difference in the true proportions ($P_1 - P_2$) is

$$(P_1 - P_2) \pm 1.96 \sqrt{\text{Var}(\hat{p}_1 - \hat{p}_2)}$$

This assumes the distribution of the difference in the proportions approximates a normal distribution.

By setting $1.96 \sqrt{\text{Var}(\hat{p}_1 - \hat{p}_2)} = 0.02$, the resulting value of

$\text{Var}(\hat{p}_1 - \hat{p}_2)$ is $\text{Var}(\hat{p}_1 - \hat{p}_2) = 1.04 \times 10^{-4}$.

To calculate the value of n , the sample proportions ($\hat{p}_1$) were used to estimate the population rates (P_1), and the average number of addresses per carrier route (500) was used for M . Also, the value of Rho was set at 0.1 since the validity of an address in a carrier route should be nearly independent from that for the other addresses.

The values of n based on various values of $\hat{p}_1$ and $\hat{p}_2$ are given in Table 8.

Table 8: Target Sample Sizes

$\hat{p}_1$	$\hat{p}_2$	n
0.95	0.93	110
0.90	0.88	192
0.85	0.83	263
0.80	0.78	325
0.75	0.73	376
0.70	0.68	418
0.65	0.63	451
0.60	0.58	473

The Bureau decided to select a sample of 418 carrier route clusters from each TAR group so that at the 95 percent confidence level a 2 percent difference in coverage could be detected for rates as low as 70 percent. For the 1980 evaluation the range of estimated coverage rates for the initial match was 56 to 76 percent.

D. Procedures to Evaluate the Vendor Address Samples

Three vendors met the evaluation criteria for at least one TAR group by supplying their housing unit counts for city delivery carrier routes within TAR ZIP Codes and their lists of addresses for the sample carrier route clusters.

The sample of addresses supplied by the vendors for a given TAR group were processed in three operations.

1. Computer Edit

The first operation performed on the sample vendor addresses was a computer edit to identify the unique addresses on one or more vendor lists for a given TAR area. Each vendor list was examined to identify within list duplicates and the duplicates were deleted from the list. A between list comparison of a given address to the addresses in the same ZIP Code and carrier route on the other vendor lists was conducted. Addresses on two vendor lists were matched if either of the following conditions were met.

- a. The addresses were the same on both vendor lists
- b. Both vendor lists contained listings for addresses at the corresponding BSA. If one vendor had more listing at the BSA, the extra listings were nonmatches.

A code was assigned to each unique address which identified the vendor list(s) that contained the address.

2. Clerical Match

The results of the computer match were used to conduct the second operation - a clerical match. The unique addresses were printed in registers for examination by clerks. The clerical matching rules were somewhat more liberal than those for the computer edit since minor spelling differences in street names or disagreement on street type (Road, Avenue, etc.) prefix, and suffix could be ignored under certain circumstances.

3. Deliverability Check

The matching rules for the computer and clerical edits were conservative since a match of two addresses meant that only one would be processed in the final operation - a deliverability check by the USPS. Each of the 4.44 million unique sample addresses that remained after the computer and clerical matches were printed on cards. A code was also printed on the card to identify the vendor list(s) that contained a given address. The USPS check involved 9,012 carrier routes in 4844 Zip Codes. The USPS classified each address either as deliverable, undeliverable, or a duplicate of a deliverable address. To facilitate the operation, the Bureau did not instruct the USPS to make correction to addresses or to list residential addresses for which cards were not supplied.

The list code was needed to classify the addresses identified during the USPS check as duplicates on a given vendor list as either within list or between list. A within list duplicate occurs when an address is listed more than once on the same list. A between list duplicate occurs when an address matches a listing on another list(s). Both types of duplicates were cases where the computer and clerical procedures did not recognize the addresses as being the same.

Table 9 shows for list 1 how duplicates were classified based on the list codes for the original and duplicate addresses. Tables for the other two lists can be derived similarly.

TABLE 9: Classification of Duplicates from the USPS Check for List 1

DUPLICATE ADDRESS IS ON LIST(S)	ORIGINAL ADDRESS IS ON LIST(S) -						
	1	2	3	1,2	1,3	2,3	1,2,3
1	W	B	B	W	W	B	W
2	B	-	-	B	B	-	B
3	B	-	-	B	B	-	B
1,2	W	B	B	W	W	B	W
1,3	W	B	B	W	W	B	W
2,3	B	-	-	B	B	-	B
1,2,3	W	B	B	W	W	B	W

"B" classified as a between list duplicate

"W" classified as a with'n list duplicate

"-" has no duplicate status for list 1

For a given list the number of valid addresses included the between list duplicates since these duplicates match deliverable addresses on another list(s). Within list duplicates were counted against the vendor in terms of list quality.

E. Evaluation Procedure

Memorandum #AA-12 dated April 4, 1988 in this series provides a detailed description of the evaluation methodology for the 1990 Mailing List Evaluation.

F. Results of the Evaluation

The evaluation of vendor address lists for the 1990 census indicated that the utility of these lists has increased since the evaluation for the 1980 census. In particular,

1. the estimated proportion of duplicate listings on the vendor lists awarded the contracts in 1990 (0.6 percent of the sample addresses) is much lower than the corresponding rate for 1980 (12 percent).
2. the estimated percentage of listings for units at multiunit basic street addresses that lacked unit designations on the vendor lists procured for the 1990 census was 1.3 percent. The corresponding rate for the 1980 evaluation is not available. However, as described in Section II.G.1 missing unit designations were a big problem in 1980.

To identify TAR groups for which the awarded vendor list had severe undercoverage of addresses, the adjusted vendor count and the USPS residential stop count for city delivery carrier routes in TAR ZIP Codes were compared for each TAR group. The adjusted vendor count was calculated by taking the product of the vendor address count for the entire TAR group and the estimated proportion of valid addresses on the vendor list based on the sample of addresses returned from the USPS deliverability check. The residential stop counts were taken from the August, 1986 version of the USPS Delivery Statistics file. For 20 of the 21 TAR groups the ratio of the adjusted vendor count to the USPS residential stop count was at least 92 percent. The percent for the other group was very low. Overall, the ratio of the adjusted vendor count to the USPS residential stop count for all TAR areas was about 95 percent. It is clear that the coverage of the vendor lists is very good for all areas except for the one TAR group.

V. REFERENCES

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TAR Areas Offered by Vendors 1, 2, 3, and 4

Group 1a

Baton Rouge
New Orleans
Shreveport
Columbia, SC
Little Rock
Louisville
Memphis
Nashville
Mobile
Charlotte
Pensacola
Harrisburg
N.E. Pennsylvania

Group 1b

Cincinnati
Cleveland
Columbus, OH
Toledo
Dayton
Davenport
Des Moines
Flint
Grand Rapids
Lansing
Fort Wayne
Gary
Indianapolis
Peoria

TAR Areas Offered Only by Vendors 1, 2, and 3

Group 2a

Albany, NY
Buffalo
Rochester, NY
Syracuse
Utica
Fall River
Worcester
Lancaster
Pittsburgh
Reading
York
Allentown
Paterson
Trenton
Long Beach
Wilmington, DE
Providence

Group 2b

Albuquerque
Bakersfield
Fresno
Oxnard
Sacramento
San Diego
San Jose
Stockton
Denver
Phoenix
Tucson
Portland, OR
Salt Lake City
Seattle
Spokane
Tacoma

Group 2c

Atlanta
Austin
Beaumont
Dallas
El Paso
Houston
San Antonio
Birmingham
Charleston, NC
Greenville
Fort Lauderdale
Jacksonville
Miami
Orlando
Tampa
West Palm Beach
Greensboro
Raleigh
Newport News
Norfolk
Richmond
Oklahoma City
Tulsa
Bradenton, FL
Panama City, FL

Group 2d

Boston
Washington
Detroit
San Francisco

Group 2e

Kansas City
St. Louis
Madison
Milwaukee
Minneapolis
Omaha
Sioux City
Wichita
Grand Forks, ND-MN
Kokomo, IN
Lawrence, KS

TAR Areas Offered Only by Vendors 1, 2, and 4

Group 1

Canton
 Youngstown
 Akron
 Chatanooga
 Knoxville

TAR Areas Offered Only by Vendors 1, 3, and 4

Group 4a

Bay City
 Jackson, MI
 Kalamazoo
 Muskegon
 Saginaw
 Ann Arbor
 Bloomington, IN
 Evansville
 Lafayette, IN
 Muncie
 South Bend
 Terre Haute
 Columbia, MO
 Hamilton
 Lima
 Lorain
 Springfield, OH
 Kenosha
 Racine
 Rockford
 Springfield, IL
 Waterloo

Group 4b

Altoona
 Erie
 Boise City
 Alexandria
 Lafayette, LA
 Lake Charles
 Monroe
 Biloxi
 Jackson, MS
 Charleston, WV
 Huntington
 Parkersburg
 Wheeling
 Fort Smith
 Pine Bluff
 Gadsden
 Huntsville
 Tuscaloosa
 Johnson City
 Lexington
 Owensboro

TAR Areas Offered Only by Vendors 1 and 2

Group 5a

New York
Philadelphia
Chicago
Los Angeles

Group 5b

Anaheim
Riverside
Baltimore
Binghamton
Nassau
Bridgeport
Bristol
Hartford
New Britain
New Haven
Brockton
Fitchburg
New Bedford
Springfield, MA
Jersey City
New Brunswick
Newark
Las Vegas

TAR Areas Offered Only by Vendors 1 and 3

Group 6a	Group 6b	Group 6c	Group 6d
Atlantic City	Abilene	Appleton	Billings
Vineland	Amarillo	Eau Claire	Great Falls
Johnstown	Bryan	Green Bay	Colorado Springs
Williamsport	Corpus Christi	La Crosse	Greeley
Lawrence	Galveston	Battle Creek	Pueblo
Lowell	Killeen	Bloomington, IL	Honolulu
Manchester	Longview	Decatur	Modesto
Nashua	Lubbock	Kankakee	Salinas
Poughkeepsie	Midland	Cedar Rapids	Santa Barbara
	San Angelo	Dubuque	Santa Cruz
	Sherman	Duluth	Santa Rosa
	Tyler	Rochester, MN	Vallejo
	Waco	St. Cloud	Provo
	Wichita Falls	Fargo	Reno
	Albany, GA	Lincoln	Richland
	Augusta	St. Joseph	Yakima
	Columbus, GA	Springfield, MO	Salem
	Macon	Sioux Falls	
	Savannah	Topeka	
	Anniston		
	Florence		
	Montgomery		
	Daytona Beach		
	Fort Myers		
	Gainesville		
	Lakeland		
	Melbourne		
	Tallahassee		
	Sarasota		
	Fayetteville, NC		
	Wilmington, NC		
	Asheville		
	Fayetteville, AR		
	Lawton		
	Lynchburg		
	Petersburg		
	Roanoke		
	Pascagoula		

TAR Areas Offered Only by Vendors 1 and 4

Group 7

Anderson
Mansfield
Staubenville
Texarkana
Champaign

TAR Areas Offered Only by Vendor 1

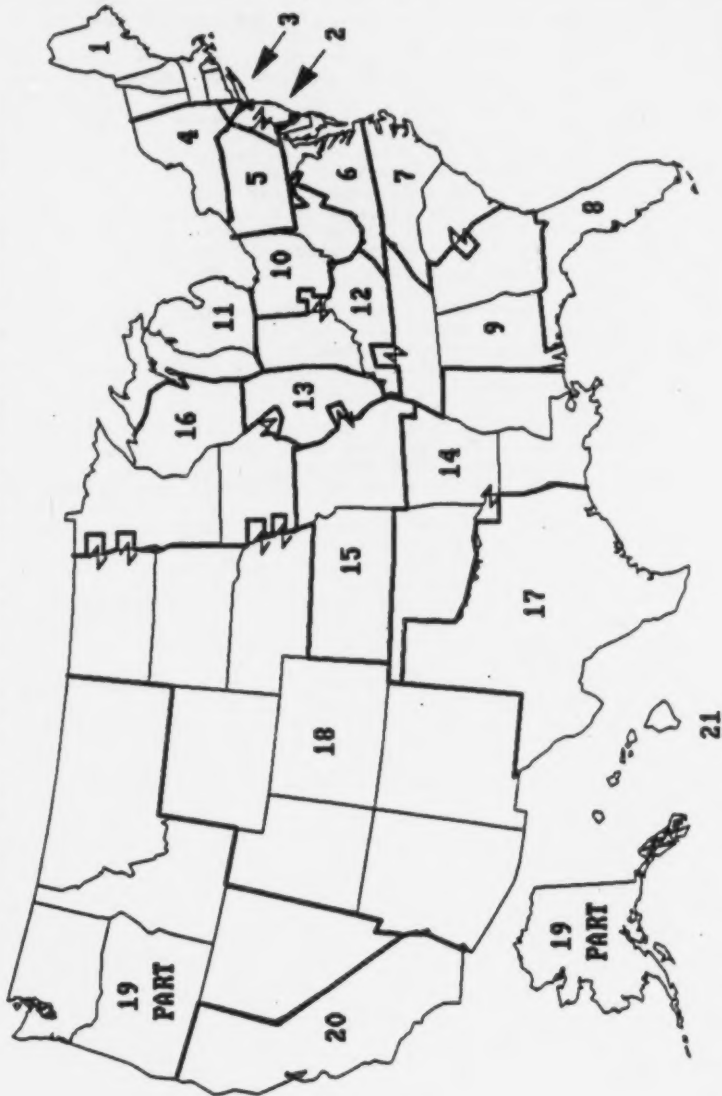
Group 8

Brownsville
Burlington
Clarksville
Danbury
Elmira
Eugene
Fort Collins
Laredo
Lawiston
McAllen
Meriden
New London
Norwalk
Odessa
Pittsfield
Portland, ME
Stamford
Waterbury

Definition of Bid Groups for the Vendor List Evaluation

Group Number	Group Contains TAR Areas in the Indicated States or Counties
1	Connecticut; Maine; Massachusetts; New Hampshire; Rhode Island; Vermont
2	New Jersey; TAR counties in Pennsylvania for the Philadelphia urbanized area
3	TAR counties in New York for the New York City and Nassau - Suffolk urbanized areas
4	TAR counties in the balance of New York
5	TAR counties in the balance of Pennsylvania
6	Delaware; District of Columbia; Maryland; Virginia
7	North Carolina; South Carolina; TAR counties in Georgia for the Augusta urbanized area
8	Florida
9	Alabama; Tennessee; TAR counties in the balance of Georgia; TAR counties in Kentucky for the Clarksville - Hopkinsville urbanized area
10	TAR counties in the balance of Ohio (see group 12); West Virginia
11	Michigan
12	Indiana; TAR counties in the balance of Kentucky; TAR counties in Ohio for the Cincinnati, Dayton, Hamilton, and Springfield urbanized areas
13	TAR counties in the balance of Illinois (see groups 15 and 16)
14	Mississippi; Louisiana; Arkansas; Oklahoma; TAR counties in Texas for the Texarkana urbanized area
15	Kansas; Missouri; TAR counties in Illinois for the St. Louis urbanized area
16	Wisconsin; TAR counties in the balance of Minnesota (see group 18) and Iowa (see group 18); TAR counties in Illinois for the Davenport urbanized area
17	TAR counties in the balance of Texas
18	Arizona; Colorado; Nebraska; New Mexico; North Dakota; South Dakota; Utah; Wyoming; TAR counties in Iowa for the Sioux City and Omaha urbanized areas; TAR counties in Minnesota for the Fargo and Grand Forks urbanized areas
19	Alaska; Idaho; Montana; Nevada; Oregon; Washington
20	California
21	Hawaii

1990 VENDOR LIST EVALUATION GROUPINGS



United States General Accounting Office

GAO

Testimony

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Status of Plans for the 1990 Decennial Census

Statement of
Gene L. Dodaro, Director
General Management Issues
General Government Division

Before the
Subcommittee on Government Information
and Regulation
Committee on Governmental Affairs
United States Senate



STATUS OF PLANS FOR THE 1990 DECENNIAL CENSUS

SUMMARY OF STATEMENT BY
GENE L. DODARO
DIRECTOR, GENERAL MANAGEMENT ISSUES
GENERAL GOVERNMENT DIVISION

Given the inherent difficulty of taking a census, the Bureau has made some positive strides to improve its operations for the next decennial census. For example, the Bureau will process census data earlier, allowing more time for quality checks. While improvements have been made, GAO believes that two important issues require greater attention--controlling escalating costs and recruiting and retaining a huge temporary workforce.

GAO believes that the Bureau's estimate of \$2.6 billion for taking the 1990 census is understated because it does not fully incorporate prospective cost increases. The Bureau historically has had difficulty controlling costs. Cost estimates for the 1990 census are following the 1980 pattern, when they rose dramatically as the census year drew closer. GAO estimates that if the 1990 census is done as planned it could cost \$3 billion.

The Bureau's current approach to identifying cost reductions has not addressed the magnitude of possible funding shortfalls nor comprehensively identified program priorities. Not making early decisions on program priorities could force cutbacks in census operations more drastic than occurred in 1980. This could adversely affect data quality and compel the Bureau to request supplemental appropriations, as happened in 1980.

The Bureau also must confront serious difficulties in attracting and retaining the over 400,000 temporary employees it needs in 1990. Inadequate pay contributed to staffing problems in early census activities. To improve its pay competitiveness, the Bureau is considering geographic pay scales for 1990. GAO believes this is needed. The Bureau should expedite decisions on its pay structure so that recruiting efforts are not hampered.

The labor pool available for census employment needs to be enlarged. GAO supports legislation that would enable federal civilian and military retirees to accept temporary census jobs without reductions in their retirement benefits or salaries.

In addition to addressing the challenges of completing the 1990 census, the Bureau also must make progress in looking ahead to the 2000 Decennial Census. GAO believes that the combination of escalating costs and mounting staffing difficulties calls for a fundamental re-thinking of the current census approach and the need to design more innovative census strategies. To begin this effort, the Bureau needs to ensure that the research program included in the 1990 census will provide insights into developing an approach for the 2000 Decennial Census.

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear today to discuss our observations on the status of the 1990 decennial census. Taking an accurate and complete count is extremely important. Census data are used to apportion seats in the U. S. House of Representatives, distribute billions of dollars in federal aid, and meet other vital national data needs over the next 10 years.

My comments today are based on the results of our reviews of the Census Bureau's fiscal year 1990 budget request, which at \$1.3 billion represents about one-half of the Bureau's estimated \$2.6 billion full-cycle census costs; the 1988 dress rehearsal, which was the Bureau's final opportunity to test procedures and operations under census-like conditions; the prelist operation, in which the Bureau is developing the 1990 address list for suburban and rural areas; and Bureau planning documents for future censuses.

The Bureau has made some positive strides to improve its operations for the 1990 census and overcome significant problems experienced in the 1980 census. For example, census data will be processed earlier, which will allow more time for quality checks. The Bureau also has automated some error-prone manual operations, such as the preparation of maps. In the 1980 census, manually produced maps were in some cases illegible, had poorly delineated boundaries, were not timely, and contained

information which was inconsistent with information in other Bureau geographic files.

Two key areas in particular, however, will continue to challenge the Bureau throughout the census. These entail

- containing escalating census costs without significantly compromising data quality, and
- attracting and retaining the over 400,000 temporary employees needed.

The Bureau also needs to continue early efforts to plan for the 2000 census. In particular, it needs to execute its research and experimental program in the 1990 census to help prepare for the future. Early planning is critical if the Bureau intends to make significant changes in census methodology or technology for the 2000 census. The combination of escalating costs and growing staffing problems underscores the need for the Bureau to begin a fundamental reexamination of the current approach to taking the census.

CONTROLLING CENSUS COSTS

Controlling decennial census costs without compromising the quality of the data has been a longstanding dilemma for the

Bureau. For the 1980 census, cost estimates rose significantly during the 5 years preceding the actual census. In 1975 the Bureau originally estimated that the 1980 census would cost \$450 million. The estimate rose to \$565 million in 1977, and in 1980 it jumped to \$1 billion. The 1980 census eventually cost about \$1.1 billion. Because the Bureau had underestimated costs for 1980, it ran out of funds during the census, disrupting operations and requiring \$50 million in supplemental appropriations.

The funding shortfall in 1980 also prompted actions that reduced data quality and slowed dissemination of some publications. For example, the Bureau reduced the number of staff who coded the data from census questionnaires, thus contributing to a delay of about 1 year in the publication of some data on population characteristics. In addition, one-half of the data for some population characteristics was not coded at all, diminishing the usefulness of certain census publications.

Similar to 1980, cost estimates for the 1990 decennial have escalated in recent years. The Bureau's initial objective was to keep the 1990 per housing unit cost no higher than the 1980 level, after adjusting for inflation. Using this objective, the Bureau estimated in 1985 that the 1990 census would cost \$1.8 billion. In 1986, however, the estimate was raised to \$2.6 billion--a 44-percent increase. On the basis of continued

inflation and more current cost estimates, we believe that the 1990 census, as planned earlier in the decade, would cost about \$3 billion.

To keep the cost within its \$2.6 billion estimate, the Bureau has begun to make program reductions. So far Bureau officials have identified savings totaling more than \$40 million. These include:

- scaling back pay increments and eliminating proposed geographic pay scales for processing office personnel. Such changes would account for \$23 million, because to date the Bureau has not experienced problems in attracting and retaining staff for these offices.
- decreasing data editing of population characteristics in the nation's most rural areas, totalling \$5 million; and
- scaling back staff and travel funds for decennial promotion activities, for a savings of \$1.1 million.

The Bureau also has targeted other program reductions but, as of yet, has not calculated the exact savings to be accrued. For example, the Bureau decreased the number of first-line supervisors, increasing the ratio of enumerators (census takers)

to their supervisors from 8:1 to 9:1 or 10:1, depending on the type of office.

In addition, the Bureau has decided not to update its new automated geographic files prior to tabulating 1990 census counts to incorporate changes, such as new streets, noted in its field canvassing activities. These changes should not affect the completeness of the population counts because new streets and housing units will be included in the manually updated maps the Bureau will use in 1990. However, the maps the Bureau provides to localities to check the accuracy and completeness of preliminary census counts might not show recently built streets. This may create a perception among local officials that census counts are inaccurate. In addition, the published census maps will not contain the most current geographic information.

As the Bureau moves to contain costs, it simultaneously faces additional financial pressures, such as the need to raise its 1990 pay rates for district offices to competitive levels. As I will discuss later, the Bureau recognizes that in many areas, its pay rates are too low. The Bureau is considering adopting geographic wage rates based upon its analysis of local labor markets and an identification of competitive pay rates for each of its over 450 district offices.

The Bureau has not fully incorporated prospective cost increases, such as geographic pay rates and inflation, into its \$2.6 billion cost estimate. Moreover, its current approach to identifying cost reductions, while helpful, has not directly addressed the magnitude of possible funding shortfalls.

The Bureau needs to make a complete cost estimate and determine program priorities while time affords some flexibility. The Bureau needs such a list of program priorities to aid in making the difficult funding decisions that it confronts. The failure to make such decisions now could force later cutbacks in census operations--cutbacks that could be more drastic than those that occurred in 1980. As in 1980, the Bureau might then be compelled to request supplemental funding.

PERSISTING STAFFING DIFFICULTIES

Problems in attracting and retaining a quality workforce historically have plagued decennial census operations. During peak operations in 1980, for example, the Bureau was unable to fill 30 percent of its enumerator positions and suffered high turnover rates. Staff shortages and high turnover can lead to additional recruitment and training costs, as well as contribute to delays in completing census activities.

The Bureau faces equally severe challenges in 1990. To help ensure sufficient staff, the Bureau anticipates that it will need to recruit at least 1.6 million applicants for district offices in 1990, or about 45 percent more than the Bureau needed in 1980. This increase is due to several factors, including an estimated increase in the number of housing units, an expected mail response rate lower than in 1980, and anticipated high job refusal and turnover rates.

Implementing Competitive Pay Rates

The most fundamental staffing challenge confronting the Bureau is ensuring that its pay rates are competitive. Problems in staffing early field activities for 1990 demonstrated how inadequate pay could hamper recruitment and retention. For example, about 28 percent of prelist areas reported difficulties in meeting recruiting and staffing goals. In addition, according to a Bureau official, the turnover rate was over 60 percent, or about twice what the Bureau had expected. While all of the staffing difficulties cannot be attributed to pay, inadequate compensation appeared to have played a major role in some areas, according to reports from the Bureau's regional recruiters.

To meet prelist staffing needs, the Bureau raised its enumerator pay in six east coast areas from \$5.50 to \$8.00 per hour --a 45-percent increase. The Bureau is not finished evaluating

the effect of the pay increase on census costs or productivity, but preliminary data indicate that the higher pay rate increased the number of applicants. For example, in Northern Virginia, 200 persons had been recruited before the pay increase. However, in the 2-week period after the pay increase was implemented, 500 applicants were recruited.

The Bureau has initiated two major efforts to improve the competitiveness of its pay rates. First, in its fiscal year 1990 budget request, the Bureau is requesting \$21 million for pay increases in district offices. Second, the Bureau is reviewing the implications of a full-scale geographic wage system with six different rates. As currently envisioned, the proposal would pay enumerators between \$5.50 and \$7.50 per hour depending on where they work. An \$8.00 per hour rate would be reserved for district offices that suffer from extreme staffing shortages.

We have previously encouraged the Bureau to consider a geographic pay system that is more sensitive to local market conditions.¹ To date, the Bureau has not reached a final decision on the design of its 1990 pay system. It needs to decide soon so that the Bureau has the time and flexibility to address the cost implications of its approach. Also, continuing indecision about pay could interfere with the schedule for hiring

¹Status of the 1990 Decennial Census: An Update, (GAO/T-GGD-89-15, Mar. 23, 1989); Status of the 1990 Decennial Census, (GAO/T-GGD-88-53, Sept. 27, 1988).

activities for 1990, such as developing, printing, and distributing recruitment materials. In addition, because of problems it has had with timely delivery of pay checks in the past, the Bureau needs to test changes to its pay system to ensure that it can effectively administer a geographic wage system on a nationwide basis.

Increasing the Number of Job Applicants

Better pay alone will not solve all of the Bureau's staffing problems. The Bureau now faces a diminished labor pool compared to the one available in prior Decennials. Moreover, the nature of decennial work is unattractive to many potential employees. Census employment is temporary, in most cases lasting several weeks; most positions do not earn benefits; and access to an automobile is required for many field positions.

Federal retirees are an important potential source of census employees that has not been used. Legislation recently has been proposed that would enable federal civilian and military retirees to work on the decennial census without reductions to their annuities or salaries. We believe that passage of this legislation could improve the Bureau's staffing situation in 1990 by expanding the labor pool and thereby providing the Bureau with access to a source of reliable workers who have demonstrated their commitment to public service.

PREPARING FOR FUTURE CENSUSES

The two major challenges confronting the Bureau for 1990 that I discussed--controlling census costs and attracting and retaining a quality workforce--have been longstanding problems for the Bureau. For example, the census has become more expensive over time, measured in constant 1980 dollars. The Bureau spent \$6.85 per housing unit in 1970 and \$12.10 in 1980. The pattern of significant housing unit cost increases will likely continue for 1990.

The Bureau also repeatedly has confronted serious staffing problems. These difficulties will be heightened by continuing demographic changes. In the coming years, the Nation's population and workforce will grow more slowly than at any time since the 1930s. Workforce 2000, a study of work and workers in the 21st century initiated by the Department of Labor and done by the Hudson Institute, concluded that the labor force, which grew by 2.9 percent a year in the 1970s, will be expanding by only 1 percent annually in the 1990s.

Unless the Bureau fundamentally alters its approach to taking the census, the pattern of cost escalation and staffing problems will continue. In our recent transition report on the Department of Commerce, we noted that early planning is especially important if

basic methodological changes are to be considered.² We recommended that the Secretary of Commerce hold the Bureau accountable for a rigorous exploration of cost control approaches and alternative methodologies for doing the 2000 census. Some suggestions have been made that merit serious consideration. For example, the Bureau could develop relationships of shared responsibility and authority with the Postal Service or state and local governments for actual census operations, including address list development and data collection activities.

In addition, the Bureau is exploring the possibility of reducing the scope of the decennial census by decreasing the amount of information requested by the questionnaire. This streamlining could increase the mail response rate and reduce the cost of data collection and processing efforts. We previously have encouraged the Bureau to evaluate the use of a shortened questionnaire.³

In our report on pretests for the 1990 census, we recommended that the Bureau begin earlier planning and testing for future

²Transition Series: Commerce Issues, (GAO/OCG-89-11TR, Nov. 1988).

³ Decennial Census: Issues Related to Questionnaire Development, (GAO/GGD-86-74BR, May 1986).

decennial censuses.⁴ The Bureau subsequently created a 21st Century Decennial Census Planning Staff to begin planning for the 2000 census. This new group has a two-fold mission: to prepare an early start for the 2000 census, and to stimulate informed debate about long-range trends and their effects on 21st century decennial censuses.

The formation of the 21st Century Decennial Census Planning Staff represents a major step toward preparing for future censuses. It is important that the Bureau sustain its commitment to early planning. In the past, the Bureau's planning efforts generally experienced delays, were incomplete, and failed to fully explore innovative approaches. For example, we have reported that a late start in detailed planning contributed to the Bureau's decision to discontinue consideration of optical mark reader technology for 1990. As a result, the Bureau excluded a potentially useful technology without fully exploring it.⁵

The Bureau also needs to ensure that its 1990 research and experimental program will provide it with valuable information to assist in making decisions about the census approach for the 2000 decennial. A decennial census offers the important opportunity to test innovative approaches and technologies under

⁴Decennial Census: Pretests Could Be Used More Effectively in Census Planning, (GAO/GGD-87-24BR, Jan. 1987).

⁵Decennial Census: Status of Plans to Computerize Questionnaire Data, (GAO/GGD-86-76BR, May 1986).

actual census conditions. Thus far, the Bureau has not taken full advantage of its 1990 research and experimental program to help prepare for the 2000 census. For example, as I noted earlier, the Bureau is considering decreasing the scope of the 2000 census by reducing the number of questions included on the questionnaire. However, the Bureau does not plan to test the effectiveness of using a streamlined questionnaire in its 1990 research and experimental program.

In closing, Mr. Chairman, considering the inherent difficulties in taking a census, we feel the Bureau is making progress in a number of key areas. However, the Bureau must address some critical issues in the immediate future in order for the nation to have a cost-effective and well-managed 1990 census. The Bureau also needs to continue its effort to prepare for the 2000 census, because fundamental changes in census methodology may be needed.

Mr. Chairman, this concludes my statement. I would be pleased to respond to questions.

Statement of Peyton Young*
before the
Governmental Affairs Subcommittee
on Government Regulation and Information
United States Senate
May 5, 1989

I am honored to be asked to appear before this committee to discuss the effects of the 1990 census on political reapportionment. My remarks will be based in part on joint research that I have conducted over the past fifteen years with my colleague Michel Balinski of the State University of New York. I shall address primarily the uncertainties that are inherent in attempting to project the results of the 1990 census, and then briefly mention the problem of bias in the current method of apportionment.

Origins and Uses of the Census

Article I of the Constitution of the United States calls for a census every ten years, the purpose being to keep the apportionment of seats in the House of Representatives up to date with the populations of the states. Over the years, the uses of the census have multiplied far beyond this original purpose and the census has taken on correspondingly

*Peyton Young is Professor of Public Policy at the School of Public Affairs at the University of Maryland, and Guest Scholar at the Brookings Institution. The views expressed in this statement do not necessarily reflect those of staff members, officers, or trustees of the University of Maryland or the Brookings Institution. The author wishes to thank Michael Cohen for assistance in analyzing the data.

greater importance. Census numbers enter into grant-in-aid formulas at the federal, state, and local levels for such diverse purposes as housing, medical care, highways, education, and public health. They also provide the basis for apportioning representation in city, county, and state legislative bodies. Given the increasing insistence by the courts that representative districts at all levels of government should conform to a strict standard of mathematical equality, it is extremely important that the head counts provided by the census be accurate, not only in the aggregate, but also at the level of the county and township as well. These demands for increased accuracy place a heavy burden of responsibility on the Census Bureau, of course, but they also place a burden on the Congress to provide the resources necessary to improve coverage evaluation, and to provide a more complete picture of how the population is changing between decennial censuses.

Census Projections for 1990

Every several years the Census Bureau publishes estimates of what the next official census will show based on interim estimates of how the population is changing during the intercensal period. The most recent of these projections was issued in April, 1988. These projections are listed in Table 1, together with the implied apportionment of seats in the House. According to this projection, eighteen seats will shift as a result of the 1990 census. The gains are all concentrated in the South and West, while almost all of the losses are sustained in the Northeast and Midwest. The combined effect of these shifts on the four regions is summarized in Table 2.

Table 1. House Apportionment Based on Census Bureau 1990 Projections (April 1, 1988).

State	Projected population	Projected representation	Change from 1980	Projected range: 1990
AL	4,181,000	7	0	7-8
AK	576,000	1	0	1
AZ	3,752,000	7	2	6-7
AR	2,427,000	4	0	4-5
CA	29,126,000	50	+5	46-56
CO	3,434,000	6	0	5-7
CT	3,279,000	6	0	5-6
DE	666,000	1	0	1
FL	12,818,000	22	+3	20-25
GA	6,663,000	12	+2	10-13
HI	1,141,000	2	0	2
ID	1,017,000	2	0	2
IL	11,612,000	20	-2	18-22
IN	5,550,000	10	0	9-11
IA	2,758,000	5	-1	4-5
KS	2,492,000	4	-1	4-5
KY	3,745,000	7	0	6-7
LA	4,313,000	8	0	7-9
ME	1,212,000	2	0	2
MD	4,729,000	8	0	7-9
MA	5,880,000	10	-1	9-11
MI	9,293,000	16	-2	14-18
MN	4,324,000	8	0	7-8
MS	2,699,000	5	0	4-5
MO	5,192,000	9	0	8-10
MT	805,000	1	-1	1-2
NE	1,588,000	3	0	3
NV	1,076,000	2	0	2
NH	1,142,000	2	0	2
NJ	7,899,000	14	0	12-15
NM	1,632,000	3	0	3
NY	17,773,000	31	-3	29-35
NC	6,690,000	12	+1	11-13
ND	660,000	1	0	1
OH	10,791,000	19	-2	16-21
OK	3,285,000	6	0	5-6
OR	2,766,000	5	0	4-5
PA	11,827,000	20	-3	18-23
RI	1,002,000	2	0	2
SC	3,549,000	6	0	5-7
SD	708,000	1	0	1
TN	4,972,000	9	0	8-9
TX	17,712,000	31	+4	28-34
UT	1,776,000	3	0	3
VT	562,000	1	0	1
VA	6,157,000	11	+1	9-12
WA	4,657,000	8	0	7-9
WV	1,856,000	3	-1	3-4
WI	4,808,000	8	-1	8-9
WY	502,000	1	0	1
Totals	249,274,000	435	0	

It is tempting to regard these estimated changes in population and congressional representation as being near certainties, but they are, in fact, subject to a great deal of uncertainty. This uncertainty arises primarily from the fact that current rates of population growth and migration cannot be known with perfect accuracy. The best that can be done is to extrapolate from recent trends. Given that these trends must be estimated from data spanning a period of several years, it is inevitable that "current" trends will actually be several years out of date. These trends are almost certain to change somewhat between the time that the estimates are made and the end of the decade, hence the projections based on them will almost certainly be inaccurate. The interesting question is therefore: Just how uncertain are the projections in Table 1?

The Census Bureau does not provide an official estimate of the uncertainty of its projections. To answer this question, it is therefore necessary to analyze the accuracy of the Bureau's previous projections. For each state, I compared the series B projection published in March, 1979 with the actual results of the 1980 census for that state and then computed the percent by which the actual census population differed from the projection. The results may be summarized as follows: On a state-by-state basis, the projected 1980 population exceeded the 1980 census population by 3.2 percent on average. For some states the error was much larger; in twelve of them, the error was over 6 percent, as shown in Table 3.

If the 1979 projections had been used to estimate the apportionment of the House in 1980, the projection would have been off by five seats.

Table 2. Projected Regional Shifts in Representation, 1980 to 1990.

Regions	1980 House representation	Projected 1990 representation	Shift 1980-90	Projected range:1990
Northeast	95	88	-7	85-92
Midwest	114	104	-10	100-107
South	142	152	+10	147-155
West	84	91	+7	87-96
Totals	435	435		

Table 3. States in which the Difference between the 1979 Series B Projection for 1980 and the Actual 1980 Census Population Exceeded 6 Percent.

State	1980 Projected population	1980 Census population	Percentage difference
Nevada	658,800	799,184	21.3%
Wyoming	406,500	470,816	15.8
Washington	3,650,800	4,130,163	13.1
Utah	1,314,600	1,461,037	11.1
Oregon	2,429,600	2,632,663	8.4
Texas	13,146,700	14,228,383	8.2
Louisiana	3,925,900	4,203,972	7.1
Arizona	2,549,700	2,717,866	6.6
Oklahoma	2,846,800	3,025,266	6.3
New Hampshire	866,200	920,610	6.3
Idaho	889,000	943,935	6.2
California	22,326,500	23,668,562	6.0

The West and South together gained five seats more than expected, whereas the East and Midwest together lost five more seats than expected. In short, just one year in advance of the 1980 census, the most reliable Census Bureau projection seriously underestimated the shift of seats from the North and East to the South and West that occurred in the following year.

Sensitivity of Apportionment to Small Population Changes

At this point it is appropriate to call attention to the extreme sensitivity of the current apportionment formula--or indeed any apportionment formula--to even tiny errors of projection. If a state is right on the borderline of getting another seat (or giving up one), then a slight change in this state's population may cause the seat to shift. Moreover, it is quite likely that, out of fifty states, several of them will actually be quite close to the borderline. Precisely, where these borderlines fall depends on the apportionment formula being used, but the phenomenon is not limited to any one method--it is inherent in the apportionment process itself. It would be an exercise in futility to try to improve census accuracy to the point where it could be used to project the apportionment of seats with certainty.

In the case of the current method, which is known as "Equal Proportions" or "Hill's method," the criterion for getting one more seat depends on the so-called "priority number" of the state. This is defined to be $p/\sqrt{a+1}$, where "p" is the state's population and "a" is its current number of seats. The state with the largest priority number is in line to get the next seat. The method works as follows: First, each state is allocated one seat as required by the Constitution. Then

the remaining 385 seats are doled out one at a time to the states with highest current priority numbers until all seats have been distributed. After each seat is given out, the priority number of the state that received it is revised, and it drops down in the priority list until its name comes up again.

To illustrate how sensitive the apportionment can be to slight changes in the state populations, consider Table 4, which lists the priority numbers of the last seven states to receive seats in the projected 1990 apportionment. If the population of any one of these states were to decrease by one percent or less relative to other states, then it would lose a seat. Table 5 shows the states that would be most likely to gain one or more seats if their populations were to increase slightly relative to other states.

The data in Tables 4 and 5 allow us to project what would happen to the congressional delegation of a state if its population alone were to be higher or lower than anticipated. In reality, of course, the projections for all of the states are likely to be off the mark to some extent. To analyze what could happen to the distribution of seats in this case requires a more sophisticated statistical model and a fair amount of computing time. I will briefly outline the model and the results of the computer simulation.

An Estimate of Census Projection Errors

In comparing the 1979 projection with the actual 1980 census populations on a state-by-state basis, the average error was +3.2 percent and the standard deviation of the error was +4.8 percent. This means that, with 95 percent probability, the projected population of any

Table 4. States at Greatest Risk to Lose One More Seat than Projected in 1990.

State	Projected population	Pro- jected number of seats	Priority number	Position in priority list	Population decrease to lose one more seat	Percent decrease to lose one more seat
NY	17,773,000	31	582,800	429	-173,861	.98%
NC	6,690,000	12	582,290	430	-59,643	.89
TX	17,712,000	31	580,800	431	-112,861	.51
GA	6,662,000	12	579,940	432	-31,643	.47
AZ	3,752,000	7	578,946	433	-11,974	.32
KY	3,745,000	7	577,866	434	-4,974	.13
MN	4,324,000	8	577,819	435	-5,391	.12

Table 5. States Most Likely to Gain One More Seat Than Projected in 1990.

State	Projected population	Pro- jected number of seats	Priority number	Position in priority list	Population increase to gain one more seat	Percent increase to gain one more seat
PA	11,827,000	21	577,099	436	+14,759	.12
CA	29,126,000	51	576,781	437	+52,411	.18
FL	12,818,000	23	569,830	438	+179,710	1.40
MT	805,000	2	569,221	439	+12,160	1.51
WI	4,808,000	9	566,628	440	+94,956	1.97
IL	11,612,000	21	566,608	441	+229,762	1.98
CA	29,126,000	52	565,580	442	+630,266	2.16

given state was between 12.8 percent on the high side and 6.4 percent on the low side. It should be noted, however, that if the populations of all states are overestimated (or underestimated) by the same percentage, then the apportionment of seats does not change, because the apportionment depends only on the relative sizes of the states' populations. In other words, the bias of the projection (+3.2 percent from 1979 to 1980) does not affect the projected distribution of House seats. What is important is not the existence of errors of projection per se, but the fact that the size of these errors varies from one state to the next.

For the purposes of this study, I assumed that the error of projection for 1990 has the same variability that it did in 1980. In particular, I assumed that the error of projection for each state is normally distributed with mean zero and standard deviation 4.7 percent ($=4.8/1.032$) and that there is no correlation between the error in one state and the error in any other state. The latter is a simplifying assumption that may slightly overestimate the variability of the apportionments. However, the assumed standard deviation of 4.7 percent almost certainly underestimates the true variability of the 1990 projections, because they were made two years in advance of the census date, as compared with the 1980 projections, which were made only one year in advance of the census date.

Results of the Simulation Study

The right-hand column of Table 1 shows the range of seats that each state could receive in 1990 with reasonable probability. "Reasonable probability" is defined here to mean a probability of at least one percent. California, for example, would receive as few as 46 seats with a probability of at least one percent, and as many as 56 seats with a probability of at least one percent. New York's range is 29-35 seats, Texas's is 28-34 seats, and so forth. Obviously, the smaller states have much more narrow ranges in absolute terms, but in percentage terms their variability is about the same as that of the larger states. These ranges were computed by drawing one hundred "census results" at random from the distribution described above, and computing the apportionment for each of them. The results were then verified by making a second independent drawing of size one hundred.

The variability in regional representation is summarized in Table 2. These ranges are somewhat smaller than for the states taken individually. The reason is that when some states in a region are overprojected, there is a probability that others in the region will be underprojected, and the two effects offset each other to some degree. To put it another way: it is highly unlikely that all states in a region would be overprojected (or underprojected) at the same time. (This is a somewhat conservative assumption considering the pattern of projection errors that was revealed in 1980, when the growth rates of most of the Western states were quite seriously underprojected. If such a pattern of correlated projection errors repeats itself in 1990, then the range

of possible outcomes for the regions might be considerably wider than Table 2 suggests.)

My reasons for drawing attention to this large degree of uncertainty is not to criticize the Census Bureau's forecasting, but to inject a note of caution in the way that these forecasts are interpreted by Congress and the public.

Inherent Bias Against Larger States

In conclusion, I cannot resist calling attention to a peculiarity of the current method of apportionment that shows up in these simulation studies. The current method was adopted in 1941 amidst assurances from the scientific community that it treats small and large states even-handedly. In fact, it does nothing of the sort. As Balinski and I have shown in our book Fair Representation (Yale University Press, 1982), the present method generally gives less representation per capita to the larger states as compared to the smaller states, even if the very smallest states (i.e., those which are projected to get only one seat) are eliminated. Theoretical arguments show that this built-in bias is on the order of 3 percent. In other words, medium-small states can expect to receive, on average, about 3 percent more representation per capita than large states. The simulation study bears out this prediction: the average bias in favor of the small states was 2.9 percent, with a standard deviation of ± 2 percent. Thus the probability is quite high that the 1990 apportionment will favor the small states even after the constitutional guarantee of one seat per state is accounted for. This pattern has been observed in every apportionment since the current method was adopted.

Personally, I find no basis in the Constitution for allowing such a discrepancy, especially when one considers that there are alternative methods of apportionment, such as Webster's (and, less desirably, Hamilton's) that are unbiased. We must also recall that the courts have generally insisted on a standard of equality for congressional districts within states that is well below 3 percent. I conclude that there is a serious question as to whether Hill's method meets this currently accepted standard of one person one vote.

Statement of

Michael A. Stoto

Chair, Census Advisory Committee
American Statistical Association

to the

Subcommittee on Government Information and Regulation
Committee on Governmental Affairs
U. S. Senate

Washington, D.C.

May 5, 1989

Mr. Chairman, thank you for the invitation to speak before this committee today. The 1990 census is fast approaching, decisions need to be taken about many matters. One of those critical issues is planning for the evaluation of the census itself.

There are three issues that I would like to address this morning. First, I believe that the 1990 census evaluation program is a critical component of the overall census taking activity, and needs to be assured of high priority attention in census operations and budgeting. Second, I think that this is especially true for one component of that program, the "post enumeration survey." Third, I am concerned with some recent actions that have restricted the Bureau's openness to the scientific community.

I am speaking today as the chair of the American Statistical Association's (ASA) Census Advisory Committee, which is both a committee of the Association as well as an official Commerce Department advisory committee. I am also a member of the Panel on Decennial Census Methodology of the Committee on National Statistics, National Research Council. My views have been shaped by my service on those two committees, but except where I quote from official positions taken by these committees, the comments in this testimony are my own and not necessarily those of the committees, the American Statistical Association, or the National Research Council.

The census research and evaluation program

Because the Census is carried out only once every ten years, the research and evaluation program is critical to its short-term and long-term success. If something doesn't work out well the first time, the Bureau cannot go back and do it better. This means that the Bureau has to learn as much as possible at Census time to help interpret and perhaps correct the data that it has, and to improve census taking the next time. Furthermore, it is difficult to learn how new census techniques will work except by experimenting with them "in realistic circumstances." Therefore, 1990 is the last opportunity to try out some innovative ideas for the year 2000 census. The Census Bureau's Research, Evaluation, and Experimental (REX) program was designed to deal with these realities. The program has three major components.

complex and operationally demanding as the decennial census. For all of the reasons outlined above, however, the REX program is a critically important component of the overall census activity. The Bureau must give high priority to the research and evaluation program, and to the prompt publication of its results. The Bureau has generally been successful in the past at paying serious attention to the evaluation of its own activities, and this tradition must be continued.

The 1990 Post Enumeration Survey

The keystone of the Bureau's REX program is the 1990 Post Enumeration Survey. It is important because of its relationship to persistent differential undercounts in the decennial census.

The Bureau's coverage evaluation efforts have shown a consistent differential undercount of Blacks going back decades, and indications of serious undercounts for other groups defined by ethnicity and socioeconomic status. New York City and State sued the Bureau to adjust in 1980, but the Bureau successfully argued that the best statistical judgment said that adjustment was not feasible. Because of heightened concern with this issue, however, the Bureau carried out a special research program through the 1980s and there were positive indications that adjustment might be justifiable on statistical terms in 1990. Many statisticians in and out of the Bureau felt that this research was promising and should be continued, and that the Bureau should proceed with the activities necessary to prepare for a possible adjustment following the 1990 census.

Despite this, the Department of Commerce decided in 1987 not to adjust the 1990 census. The Bureau has cited concerns about "operational feasibility," that is, the ability to carry out the operations needed for an adjustment in a timely fashion without interrupting the other census activities. These concerns may be valid, but they have never been discussed in any detail with any of the census advisory committees or other outside scientists.

The effects of the Department's decision go far beyond adjusting the 1990 census per se. First, the Bureau has severely cut back on critical research efforts on standards to guide the decision about whether the data support an adjustment and how to translate an estimate of the undercount into an adjustment of all population figures. Second, it has scaled back the size of the Post Enumeration Survey (PES), one of the Bureau's main tools for estimating the size and distribution of the undercount, and has given the PES a lower priority.

The Department's decision was reviewed last spring by three technical advisory committees: the Panel on Decennial Census Methodology of the Committee on National Statistics (CNSTAT), the American Statistical Association's (ASA) Census Advisory Committee, and the Census Advisory Committee on Population Statistics (POP). The Panel on Decennial Census Methodology said that:

"a large scale PES remains vitally important for the following reasons:

1. A large-scale PES is a necessary foundation for an adequate coverage evaluation program. The Census Bureau has a strong tradition of evaluation, and coverage evaluation is an important part of the decennial census. As public scrutiny continues to focus on the

The first component of the REX is **coverage evaluation**. The basic questions are how many people were not counted in the census, and where they are located. Coverage evaluation also tries to discover the kind of people who were missed, and why they were missed. This information can be used to devise better census procedures for the year 2000 and later. Moreover, if these questions can be answered accurately, it may be possible to adjust the raw counts for undercount.

The second REX component is **content evaluation**. The aim is to estimate the bias in the figures that are collected. For instance, this program might explore whether income is accurately reported, patterns of reporting race, ethnicity, and nationality, and so on. Information of this sort is useful to researchers and policy analysts who want to understand what the data mean. Content evaluation information is also useful for improving future censuses. Content evaluation techniques generally involve some sort of reinterview of a sample of individuals who filled out census forms, often with some means of getting more accurate data for comparison.

The final component is **operations testing and development**. This addresses both current and potential census operations. One goal is to discover which operational aspects of current census taking work well and are most efficient. This includes looking at address listing operations, mailout-mailback procedures, office procedures, coverage improvement techniques, and so on. It is useful for planning the operational aspects of the next census. This program also provides a way to field test potential innovations for the next census or later in realistic settings. For instance, it is important to explore census taking procedures that are less labor intensive, and new uses of computer technology.

Both of the census advisory committees of which I am a member have been discussing the plans for the 1990 REX program with the Bureau for years. I would like to report that all is well, but I must say that some committee members are concerned that these plans are not as well developed as they ought to be. For instance, the ASA committee said at its spring 1988 meeting that it was "concerned that the plans are still vague and incomplete at this late date." At its fall 1988 meeting the ASA committee said:

"At each of its last two meetings, the Committee made serious recommendations about the REX program, especially concerning the testing and evaluation of new census procedures and technologies, and preparing for an adjustment for undercount in 1990 or 2000. The recommendations seem to have, in large part, been ignored. The Committee remains convinced of the continued validity and importance of these recommendations, and wishes to reassert them. If progress has been made in these areas, the Committee would like to see an in-depth report at the next meeting."

The Bureau responded that it did take the Committee's recommendations seriously, and that planning was continuing and all was well. There was, however, no report on the overall REX program at the recent meeting. I would like to be able to assure you that the 1990 REX program is on track, but neither of the census advisory committees have been given enough information to make that judgment.

In the general nature of things, evaluation--which has long-term payoffs--tends to get less priority than operations--which have immediate payoffs. This is especially so for an activity as

Statement of Michael A. Stoto

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quality of census data, the Census Bureau should strengthen its coverage evaluation activities, carrying its program to a new level of quality and accuracy.

2. Planning for the census of 2000 will depend critically on the results of the 1990 census coverage evaluation. Without adequate coverage evaluation in 1990, planning for and conduct of the next census will be impaired.
3. For a variety of reasons—including an unexpectedly large undercount, a legal directive from the Congress or the courts, or a decision by a new administration—it may become necessary or desirable to adjust the census of 1990 for coverage errors. To meet its responsibilities to the nation, the Census Bureau should be in a position to respond constructively.
4. A large-scale PES in 1990 will put the Census Bureau in a better operational position to consider the feasibility and desirability of adjustment for the census of 2000.

For these reasons, the panel reiterates its earlier recommendations that a large-scale PES be an integral part of the census dress rehearsal and the census of 1990. The panel considers the presently planned PES size of 150,000 households to represent a bare minimum. We urge that any pressures to reduce it further be firmly resisted and that, if possible, the size be increased."

The ASA committee endorsed this statement in full, and the Population committee wrote a similar statement.

In addition to the reasons given by these committees, I would add one more. Even if the census, *per se*, is not adjusted for the undercount, it may be feasible and desirable to adjust the estimates of the population that the Bureau will make on a regular basis throughout the 1990s. These estimates are important in their own right because of their use as denominators in vital statistics and in the distribution of federal funds. They are also used to construct weights for the Current Population Survey and other critical national surveys. A careful, large-scale PES would be needed to make these adjustments in an acceptable way.

I am concerned that there is a chance that the Bureau can't ignore that it will be ordered to adjust the census figures, and that it won't be in any position to do it well. The Bureau seems to be playing an all-or-nothing strategy, with no backup position in case they are ordered to adjust.

Let me stress that the issue here is not whether to adjust the 1990 census. I believe that the decision about adjustment should be made by the Bureau on scientific grounds, not by the court, the Congress, or by the Administration on partisan grounds. The decision should be based on the quality of the statistical data on the undercount and the adjustment. My concern is that the premature decision not to adjust may make an acceptable adjustment impossible, and may put the Bureau in a very difficult position of having to adjust with poor data.

Secrecy and openness

One additional casualty of the undercount/adjustment debate has been the Bureau's long standing policy of openness to scientific criticism. Last year, New York and others filed a suit to restore the PES and adjust the census in 1990. The Bureau's response, citing legal counsel, has been to stop discussing the issue with the professional community. This means that the official advisory committees can't do their work properly, and that scientific help and criticism are shut off, potentially leading to a long-run loss of the Bureau's credibility.

The problem is deeper than secrecy about the New York case, however. For instance, independent statisticians who spoke at the Bureau's Annual Research Conference in 1988 were required to take the word "adjustment" out of the titles of their research papers, presumably to please the Commerce Department. On another occasion, the 1987 meeting of the census advisory committees, the Director of the Bureau assured the members of the ASA and other committees that no decision had been made about adjustment, when in fact it already had been made by Commerce. On their own, such incidents might not be cause for concern. But these actions undermine the scientific community's high regard for the Bureau.

Credibility is the Bureau's most important commodity, and its tradition of openness has served both the Bureau and the Nation well. This tradition must be maintained.

Testimony of
Edward J. Spar President, Market Statistics
 Before The
Government Information and Regulatory Sub-Committee

INTRODUCTION

My name is Edward Spar, President of Market Statistics, a division of Bill Communications. Our major publication is the Survey of Buying Power an annual compendium of demographic and socio-economic information which is used by over 65,000 marketing, sales and advertising executives and analysts. Further, we consult annually with over 500 major corporations in the use of demographic information which aides them in solving their marketing problems.

Before discussing the issues facing us in the United States, I am reminded of my experience last year when discussing the issue of dissemination of government statistics at a conference for third world countries, in Cairo Egypt. For many countries, the basic concept of dissemination does not as yet exist. In other words, they collect data but do not have even a philosophical construct as to what it means to release the information to what we here call the user community. I point this out simply to remind us how advanced, even with our problems, we really are - and our respect for the work done by the Federal Statistical Agencies.

There are four topics which I will briefly touch upon. These are:

1. Importance and uses of Census data for the private sector.
2. Potential problems with regards to the 1990 Census dissemination plans.
3. Implications of any 1990 Census budget shortfall from the perspective of dissemination.
4. Policy implications based upon the present 1990 Census dissemination program

Private Sector Uses of Census Data

I would like to limit my remarks to a specific aspect of Census data use, namely the area of sales, marketing and advertising. First, when we speak of Census data, it is either in the form supplied to us by the Bureau of the Census, the same data but re-packaged, or in some other form such as updated information. In any of these cases, the critical benchmark is still Census based information.

Census data are used in probably every industry ranging from multi-million dollar product development decisions, to the small radio station in a non metropolitan county which charges \$25.00 for a minute advertising.

I have narrowed the basic uses of Census data into ten questions. Although books have been written about each of these, just mentioning them should give you a good idea in

terms of the relationship between the marketing function and the need for information. The ten are:

1. What is our share of market?
2. Are we maximizing our sales potential?
3. Are we advertising in the right places?
4. How well are our sales people performing?
5. Are our sales territories properly aligned?
6. Are we competitive?
7. Are our stores in the right locations?
8. Do we have the correct product mix?
9. Where should we open new outlets?
10. Where is the competition?

To properly answer these questions accurate and timely information are required. It is important to point out that Census data are not the only information used to answer the above questions. Everything from competitive data to availability resources is needed. The core data, or benchmarks must, however, be derived from a Decennial Census.

I would like to enter into the record as an attachment to my testimony three additional pieces of information:

1. A list of the data most often used by the private sector.
2. Geographic areas utilized by the private sector.
3. A Data vs. Applications chart.

General Dissemination Issues

Putting aside the funding issue for a moment, and assuming the Bureau of the Census will deliver what they say they will deliver, then the major issue that faces the private sector is one of timeliness. Although we believe the Bureau did an excellent technical job for the 1980 Census, there were delivery problems. Not only were some of the data delivered later than similar data delivered after the 1970 Census, the Bureau had trouble meeting their own published schedules. What will be the scenario for the 1990's? As of now, we do not have a schedule for delivery of the 1990 Census. If this is because the Bureau is still not that sure what they will produce even after they have told us what they plan to produce then we have to worry. If on the other hand, they are simply waiting to ensure that they are confident that they can meet whatever delivery promises they make, then that's fine. The former possibility, namely not as yet that sure of what will really be disseminated leads to the third issue, namely funding.

IMPLICATIONS BASED UPON ANY 1990 CENSUS BUDGET SHORTFALL

If the Bureau of the Census does not have adequate funding for the 1990 Census effort, there is the possibility that they will not deliver all the products which they have planned for. Indeed, this is exactly what happened after the 1980 Census, when the Bureau in 1981 notified the public that they were not going to release sample data at the ZIP Code level. The reason for this decision was that there were budget problems. It was also apparent that since they had the

perception that these data were basically for private sector use, if something were to be cut this would be the best approach. As it turned out, there was as much an outcry from the public sector and academic community as there was from the private sector.

Eventually the file was produced through the creation of a consortium of 17 organizations - both public and private. These organizations paid the Bureau \$250,000 to create a special file and the Bureau gave the consortium an 18 month period of exclusive use. In other words, the Bureau would not sell the file themselves for this period of time. The Bureau in a news release in March of 1982 announced: "Private Industry Solves Census Bureau Data Problem."

Although this sounds like good cooperation between the Bureau and the private sector, and indeed it was, this was a very poor precedent. These data are needed by all sectors of our society. Although those who purchased the file, did not then turn around and gouge those who needed to purchase the data, the costs asked for by private sector data firms were certainly prohibitive to many potential users. One example is the unaffiliated user, e.g. the academic researcher who wants to get the data from the university system for basic research needs. A cost, of let's say \$350.00 for a tabulation might not be a lot for a corporation, but for this researcher that might be his or her entire data collection budget.

In all my conversations with those who were part of the consortium, no one was happy about this, even though we all

knew that we would make a lot of money. We would have made a lot of money anyway. This file should have been a public file from the beginning just as it was planned to be, and no one wants this situation to be repeated.

Unfortunately, I believe we may be headed towards a repeat of the 1980 experience. According to the newsletter of the Association of Public Data Users the Census Bureau reported at the House Subcommittee on the Census and Population:

"....the Census Bureau mentioned a plan to save \$5 million: it will not provide corrections to TIGER maps after the census is taken. The Bureau feels it is not in its mandate to create new data products and that a revised TIGER file would be just that."

I in no way denigrate the idea of saving \$5 million dollars, even if the range of difference between the General Accounting Office and the Bureau is \$400 million. But we are already seeing a cut back on products even before the Census is taken. Further, this series of corrections is not only an important product in its own right for the private and public sectors, the corrected TIGER file is at the heart of planning future Decennial Censuses, along with linking with establishment files for the Economic Censuses.

I hope we are not seeing the first steps in the reduction of what was a geographic information system, namely TIGER, into nothing more than a simple file which makes nice maps. In any

event it would be a very poor decision to eliminate these corrections.

OVERALL POLICY ISSUES ASSOCIATED DECISIONS WITH THE CENSUS

In 1980, there was a lot of controversy regarding whether the Bureau of the Census should distribute software with the data products. The major issue was one of unfair competition with the private sector, since the Bureau only recovers its cost of dissemination. And please don't get me wrong, I certainly wouldn't want to see a change in our cost structure where we would have a policy such as that in Canada where Statistics Canada has to recapture all their costs.

However, the software issue will become even more sensitive in the 1990's once data are disseminated on laser disks, commonly known as CD-ROM. Many, although not all, argue that without some basic software, these disks are not very usable. This is only one example of the kinds of issues which must be resolved shortly, given the fact that the Bureau plans to release much of the 1990 Census on CD-ROM. What is required is for the Office of Management and Budget, through some combination of Circulars A-3, A-76 and A-130 to deal with the problem of what is meant by "electronic dissemination."

CONCLUSION

Just as Sisyphus must roll the rock up the hill, over and over again, for all eternity, we also seem to have an eternal need to fight the same battle with regard to dissemination. On March 12, 1982 I testified before the Subcommittee on Census and Population of the Committee on Post Office and

Civil Service of the House of Representatives, the topic being the Impact of Budget Cuts on Federal Statistical Programs. At that time we were reviewing the post Census problems associated with funding vs. the need for adequate and timely information. At that time I discussed the problems associated with the lack of information.

Now we are essentially reviewing the same issue - fortunately before the Census is taken. I hope that after all these years we have not failed to convince those responsible for the allocation of funds in the critical importance of timely, accurate and detailed federal statistical information. One thing is for sure, the private sector cannot collect it, or adequately disseminate it.

I urge those responsible for allocation funds, that they ensure that the Bureau of the Census have the necessary resources to disseminate the information which we need from the Decennial Census. If we spend the money to collect data and not ensure that these data are disseminated, then we are moving backwards towards those countries mentioned at the beginning of my statement.

Table 1.MAJOR QUESTIONS ASKED BY CONSUMER MANUFACTURERS AND
RETAILERS WHICH DEMOGRAPHIC STATISTICS HELP ANSWER

1. What is our share of market?
2. Are we maximizing our sales potential?
3. Are we advertising in the right places?
4. How well are our sales people performing?
5. Are our sales territories properly aligned?
6. Are we competitive?
7. Are our stores in the right locations?
8. Do we have the correct product mix?
9. Where should we open new outlets?
10. Where is the competition?

Table 2.DATA MOST OFTEN USED IN THE PRIVATE SECTOR

A. Government Based Demographic and Socio-Economic

1. Population
2. Households
3. Household Income
4. Age by Sex
5. Age of Householder
6. Size of Household
7. Presence of Children
8. Race and Ethnicity
9. Total Retail Sales
10. Retail Sales by Store Groups
11. Merchandise Lines Sold in Stores
12. Service Establishment Sales
13. Number of Employees by Store Type
14. Number of Establishments by Type and Area

B. Non Government

1. Media Research Results
2. Shopping Center Locations
3. Names and Addresses
4. Life Style Indicators
5. Automobile Registrations

Table 3.GEOGRAPHY AREAS COVERED

- a. Total United States
- b. States
- c. Metropolitan Statistical Areas
- d. Counties
- e. Cities
- f. Tracts in Metropolitan Areas
- g. Non metropolitan County Divisions
- h. ZIP Codes Areas
- i. Blocks/Block Groups in Tracted Areas
- j. Enumeration Districts (ED's) in Rural Areas.
- k. Street Addresses

Table 4.

UNITED STATES	STATES	SMSA'S	COUNTIES	ZIP CODES	TRACTS	BLOCKS	DATA APPLICATIONS
	X	X	X				Sales Territory Analysis
	X	X	X				Sales Distribution Analysis
	X	X	X				Sales Staff Evaluation
	X	X	X				Product Distribution Analysis
		X	X		X	X	Media/Marketing/Advertising Research
		X	X				Market Share/Penetration Analysis
X	X	X					New Product Development
	X	X					Product Positioning
			X	X	X	X	Direct Mail Marketing
		X	X		X		Meeting Government Regulations
				X	X	X	Site Selection
					X	X	Energy Consumption

Mexican American
Legal Defense
and Educational Fund

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MALDEF

TESTIMONY
ON THE
1990 DECENNIAL CENSUS
BEFORE THE
SENATE SUBCOMMITTEE ON
GOVERNMENT INFORMATION AND REGULATION

MAY 5, 1989

BY
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ASSOCIATE COUNSEL
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WASHINGTON, D.C.

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Mr. Chairman and Members of the Subcommittee:

My name is Mario Moreno. I am the Regional Counsel for the Washington Office of the Mexican American Legal Defense and Educational Fund ("MALDEF"). MALDEF is a national civil and constitutional rights organization dedicated to the protection and advancement of civil rights for Hispanics in the United States. MALDEF's national headquarters are in Los Angeles, and we have regional offices in San Francisco, San Antonio, Chicago, and here in Washington, D.C. We appreciate the opportunity to present written testimony regarding the 1990 decennial census.

MALDEF has devoted substantial time and resources to the census since the 1970's because of its importance to Hispanics and the nation. We recognize that our ability to protect Hispanic voting rights and to obtain full representation for Hispanics is dependant upon a complete and accurate census account.

a. **An Undercount of the Hispanic Community Must be Prevented**

As the Nation's fastest growing minority, Hispanics have a direct interest in ensuring that they are fully and accurately counted in the 1990 census. A complete count of the Hispanic community translates into greater Hispanic representation in Congress as well as in state and local legislatures through redistricting efforts and litigation under the Voters Rights Act. An accurate count of the Hispanic community also results in

greater federal funding for the communities in which Hispanics live.

Unfortunately Hispanics have long had a very serious problem with being undercounted in each decennial census. The Census Bureau admits that it cannot count all persons, estimating that it missed about 1% of the total United States population in 1980. The number of persons not counted, the "undercount", is greater for "hard to count" groups, including Blacks and Hispanics.¹ For example, the 1985 mid-decennial census in Los Angeles County indicated a Hispanic undercount of 9.8 percent.² Because the enumeration process will be substantively the same in 1990 as it was in 1980, it is apparent that the Hispanic community, along with other hard-to-count communities, is at serious risk of being undercounted in 1990.

There are a number of factors which contribute to the Hispanic undercount. These factors include limited English proficiency and low levels of literacy, living situations which the enumeration process serves poorly, fear and distrust of

^{1/} See 1990 Census Adjustment Procedures and Coverage Evaluation: Before the Subcomm. re: Census and Population of the House Comm. on Post Office and Civil Service, 99th Cong., 2d Sess. 7, 8 (1986) (statement of Barbara A. Bailer, Assoc. Director, for Statistical Standards and Methodology, Census Bureau); Census Under Count and the Feasibility of Adjusting Census Figure: Hearing before Subcomm. on Census and Population of the House Comm. on Post Office and Civil Service. 100th Cong., 1st Sess. 80, 91 (1987) (article submitted, E. Erickson, J.B. Kadane and J.W. Turkey, Technical Report No. 401, Adjusting the 1990 Census of Housing and Population (1987)).

^{2/} G. Diffendal, The 1986 Test of Adjustment in Central Los Angeles Count, Census Bureau Undercount Research Staff, Statistical Research Division at 4.

government, and variations on how different subgroups within the Hispanic community identify themselves.

Perhaps the greatest barrier to a complete count is distrust of government. MALDEF has long recognized a distinct fear in the Hispanic community of the Immigration and Naturalization Service (INS) and its enforcement techniques. This results into a distrust of any governmental agency, since many in the Hispanic community do not distinguish between Federal agencies. In 1980, MALDEF was instrumental in obtaining a moratorium of INS enforcement of immigration laws while the census was conducted. This moratorium helped allay some of the distrust many held, in spite of reported violations of the moratorium.

In 1990, the distrust and fear of the INS, and other federal agencies, will be particularly acute because employers will be regularly asking for immigration documentation from persons seeking employment and the INS will be enforcing the employer sanctions provisions of the Immigration Reform and Control Act of 1986 (IRCA).³ A moratorium on INS enforcement activities during the 1990 census, and forceful assurances from the Justice Department that no enforcement agencies will seek confidential information, will be necessary to help convince many that the census is indeed safe. If the Census Bureau also begins to request information on immigration status it will discourage many persons from participating in the 1990 Census.

³/ see IRCA, Pub.L. 99-603, Title I, Part A, { 101(a)(1) 100 Stat. 3360 (1986), codified at 8 U.S.C. { 1324a (civil penalties for hiring undocumented workers).

The unwillingness to participate in the Census is not limited to undocumented aliens.⁴ The impact of IRCA enforcement on the undocumented alien population has a spill-over effect into the greater Hispanic community in a number of ways. First, not all families are entirely undocumented or legal residents (whether citizens or permanent resident aliens). There are many families with mixed immigration status (e.g., undocumented parents with citizen children, one undocumented parent living with documented parent and children, or children with mixed immigration status, an undocumented child with citizen siblings). Thus, if an undocumented parent fails to take part in the census, citizen and other documented family members may not be counted either.

In addition, many low-income families often double-up in single family units or live in converted garages and other situations not intended to be used as residences because of the lack of affordable housing. These families may be reluctant to list on the census questionnaire the total number of individuals living at their address for fear that the information may be share with a housing authority and result in an eviction.

b. The MALDEF 1990 Census Program

MALDEF previously has submitted testimony on pending legislation which would exclude undocumented residents from the 1990 census count, and on pending legislation that would require

^{4/} see also discussion at 24-26, undocumented aliens may include persons who are legally entitled to reside in the United States under color of law.

an adjustment of the census figures to compensate for population undercounts. In addition to monitoring census-related legislation, the activities of the Census Bureau, and active involvement in pending census-related litigation, MALDEF is implementing a proactive agenda to help maximize the Hispanic count in 1990.

MALDEF has developed a national multi-media bilingual community outreach effort titled ;Hágase Contar! Make Yourself Count! to inform Hispanics about the importance of the census to their own community, and to urge full participation. The program consists of a national media campaign and regional community education programs overseen by a national director. The goal of the MALDEF program is to supplement not supplant the outreach activities of the Bureau of the Census.

The national media campaign includes national public service announcements on the Univision television network and the publication of several bilingual outreach materials. MALDEF is working with Univision, the National Association of Hispanic Publications and others to help ensure that the Hispanic population is adequately informed about the 1990 census.

In addition, MALDEF has census coordinators based in MALDEF offices in Los Angeles, Chicago and San Antonio. These coordinators are working with community organizations, churches, schools, volunteer and professional associations and other entities in Hispanic communities to reach out to Hispanics. The national director and census coordinators also are in constant

contact with representatives of the Bureau of the Census in an effort to coordinate activities and complement each other's efforts.

c. The 1990 Census Process

Through the outreach experiences of our census program staff and our board of directors, and our national network of Hispanic community organizations and leaders, there are some initial impressions of the 1990 census process that I would like to share with the subcommittee. MALDEF is committed to helping ensure the Census Bureau does the best job possible, however, it appears that in some instances -- however isolated -- there is already need for some improvement.

Reports from the around the country indicate that the Bureau is already encountering difficulty in hiring the number of individuals needed to conduct the census. We believe that the recruiting process, especially of Hispanics, should be carefully reviewed to ensure that the population is adequately informed of the availability of these jobs and that Hispanics are hired. In addition, the level of wages currently offered for these census positions is dissuading many qualified individuals from applying for employment with the Bureau and will lead to a high turn-over of employees. It is imperative that individuals hired to work for the Census Bureau not leave their positions after only a few weeks or months because of poor pay. This turn-over will affect the quality of the enumeration.

There is also some concern that there are insufficient outreach materials currently being disseminated. The census is less than eleven months away; it is not too early to begin informing the populace about the census using high-quality materials. Outreach materials must be bilingual and in sufficient numbers to reach the nation's Hispanic community.

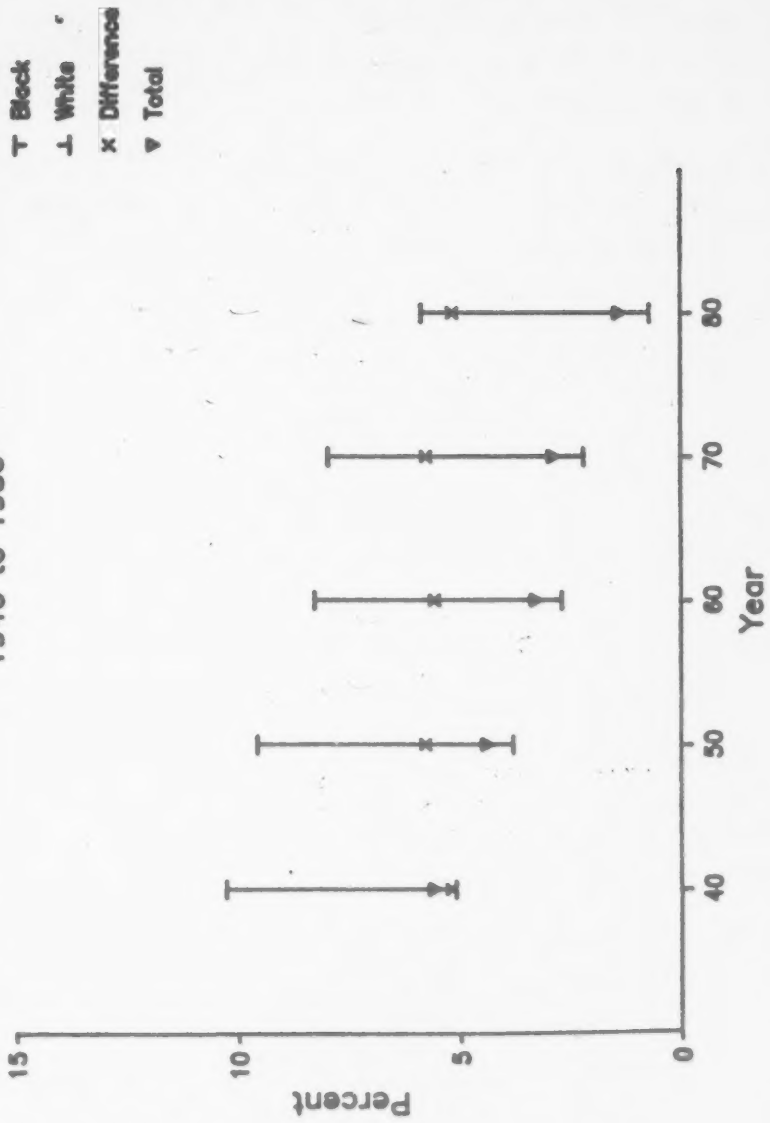
MALDEF also remains concerned with the accessibility of the Spanish-language questionnaire. The Bureau currently plans to distribute the questionnaire only upon request. This added step will discourage some Spanish-speaking families from being counted.

In conclusion, I would like to reiterate that all steps necessary must be taken by the Census Bureau and others to help minimize an Hispanic undercount in 1990. MALDEF is pursuing its objectives through the courts, by working with Congress and the Census Bureau, and implementing its own national outreach program. Congress should remain vigilant throughout the census process to ensure that the best possible job is done and that all segments of our society are counted. As always, MALDEF stands ready to assist this subcommittee as well as the Census Bureau in this effort.

I. UNDERCOUNT OF HISPANIC COMMUNITY

- A. What plans does the Census Bureau intend to implement to ensure that the undercount of minorities and the urban poor is minimized?
- B. Hispanics were undercounted in the 1980 census by a rate higher than the overall population. The mid-decennial census estimated that the Latino community was undercounted by 10-20% [as compared with a normal average overall undercount of between 2-5%].
 - 1. What lessons did the Bureau learn from the 1980 Census and the mid-decennial census?
 - 2. How does the Bureau propose not to have a 10-20% undercount of Hispanics in the 1990 census?
 - 3. What is the Bureau's plan to ensure that the undercount of Hispanics is less than 2%?
 - a. We understand that you have a plan to minimize the undercount of Hispanics to less than 2%, could the Bureau explain how this plan is different than the efforts conducted in the 1980 census?
 - 1. Was the appropriate budget allocated to ensure that the plan was successfully implemented?
- C. The Census Bureau is under a Constitutional mandate to count all persons. What plans does the Bureau have to ensure that all persons, in the Hispanic community are counted (undocumented and documented)?
- D. Does the Bureau have an assertive outreach plan, with the appropriate budget and staff, to ensure that Hispanics and other ethnic minorities and/or urban poor are accurately counted?
 - 1. If so, what is the plan? What is the budget and its allocation? Who will direct the outreach plan? How many staff members are allocated for the outreach program? Of those staff members, how many are Hispanic and how many are bilingual?
 - 2. If not, how does the Bureau propose to reach the Hispanic communities who have been traditionally undercounted by more than 10%? Does the Bureau believe that without an assertive plan the Hispanic community will respond to the questionnaire?

Graph 1: Change in the Census Undercount
1940 to 1980



41-00000-00000

Fold line

CENSUS '90

OFFICIAL 1990 U.S. CENSUS FORM



Thank you for taking time to complete and return this census questionnaire. It's important to you, your community, and the Nation.

The law requires answers but guarantees privacy.

By law (Title 13, U.S. Code), you're required to answer the census questions to the best of your knowledge. However, the same law guarantees that your census form remains confidential. For 72 years—or until the year 2062—only Census Bureau employees can see your form. No one else—no other government body, no police department, no court system or welfare agency—is permitted to see this confidential information under any circumstances.

How to get started—and get help.

Start by listing on the next page the names of all the people who live in your home. Please answer all questions with a black lead pencil. You'll find detailed instructions for answering the census in the enclosed guide. If you need additional help, call the toll-free telephone number to the left, near your address.

Please answer and return your form promptly.

Complete your form and return it by April 1, 1990 in the postage-paid envelope provided. Avoid the inconvenience of having a census taker visit your home.

Again, thank you for answering the 1990 Census.
Remember: Return the completed form by April 1, 1990.

Para personas de habla hispana —
(For Spanish-speaking persons)

Si usted desea un cuestionario del censo en español, llame sin cargo alguno al siguiente número: 1-800-XXX-XXXX.

U.S. Department of Commerce
BUREAU OF THE CENSUS
FORM D-1 (2-88-00)

CMBR No. 9807-0008
Approval Expires 07/31/91

Make sure that before you seal the envelope the address is the U.S. Census Office shown through the window.

• Need help —
See the enclosed
instruction guide or call

• This is your official
census questionnaire
• Please fill it out and
mail it back by Census
Day, April 1, 1990

If several apartment units are shown, please write all names, numbers, or locations above.

U.S. Census Bureau

Page 1

The 1990 census must count every person at his or her "usual residence." This means the place where the person lives and sleeps most of the time.

1a. List on the numbered lines below the name of each person living here on Sunday, April 1, including all persons staying here who have no other home. If EVERYONE at this address is staying here temporarily and usually lives somewhere else, follow the instructions given in question 1b below.

Include

- Everyone who usually lives here such as family members, housemates and roommates, foster children, roomers, boarders, and live-in employees
- Persons who are temporarily away on a business trip, on vacation, or in a general hospital
- College students who stay here while attending college
- Persons in the Armed Forces who live here
- Newborn babies still in the hospital
- Children in boarding schools below the college level
- Persons who stay here most of the week while working even if they have a home somewhere else
- Persons with no other home who are staying here on April 1

Do NOT include

- Persons who usually live somewhere else
- Persons who are away in an institution such as a prison, mental hospital, or a nursing home
- College students who live somewhere else while attending college
- Persons in the Armed Forces who live somewhere else
- Persons who stay somewhere else most of the week while working

Print last name, first name, and middle initial for each person. Begin on line 1 with the household member (or one of the household members) in whose name this house or apartment is owned, being bought, or rented. If there is no such person, start on line 1 with any adult household member.

LAST	FIRST	INITIAL	LAST	FIRST	INITIAL
1			7		
2			8		
3			9		
4			10		
5			11		
6			12		

1b. If EVERYONE is staying here only temporarily and usually lives somewhere else, list the name of each person on the numbered lines above, fill this circle ☐ and print their usual address below. DO NOT PRINT THE ADDRESS LISTED ON THE FRONT COVER.

House number	Street or road/Rural route and box number	Apartment number
City	State	ZIP Code
County or foreign country	Names of nearest intersecting streets or roads	

NOW PLEASE OPEN THE FLAP TO PAGE 2 AND ANSWER ALL QUESTIONS FOR THE FIRST 7 PEOPLE LISTED. USE A BLACK LEAD PENCIL ONLY.

Page 2

PLEASE ALSO ANSWER HOUSING QUESTIONS ON PAGE 3

	PERSON 1		PERSON 2		PERSON 3	
	Last name	First name	Last name	First name	Last name	First name
2. How is this person related to PERSON 1? Fill ONE circle for each person. If Other relative of person in column 1, fill circle and print exact relationship, such as mother-in-law, grandparent, son-in-law, niece, cousin, and so on.	START in this column with the household member not one of the residents in whose name the house is owned, being bought, or rented. If there is no such person, start in this column with any adult household member.		If a RELATIVE of Person 1: Husband/wife Natural-born or adopted son/daughter Son-in-law/daughter-in-law Stepdaughter/stepson If NOT RELATED to Person 1: Roomer, boarder, or tenant Household member		If a RELATIVE of Person 1: Husband/wife Natural-born or adopted son/daughter Son-in-law/daughter-in-law Stepdaughter/stepson If NOT RELATED to Person 1: Roomer, boarder, or tenant Household member	
3. Sex Fill ONE circle for each person	Male	Female	Male	Female	Male	Female
4. Race Fill ONE circle for the race that the person considers himself/herself to be. If Indian (Amer.), print the name of the enrolled or principal tribe. If Other Asian or Pacific Islander (API), print one group, for example, Filipino, Laotian, Thai, Tongan, Puerto Rican, and so on. If Other race, print race.	White Black or Negro Indian (Amer.) (Print the name of the enrolled or principal tribe) Japanese Chinese Filipino Hawaiian Korean Vietnamese Other race (Print race)		White Black or Negro Indian (Amer.) (Print the name of the enrolled or principal tribe) Japanese Chinese Filipino Hawaiian Korean Vietnamese Other race (Print race)		White Black or Negro Indian (Amer.) (Print the name of the enrolled or principal tribe) Japanese Chinese Filipino Hawaiian Korean Vietnamese Other race (Print race)	
5. Age and year of birth a. Print each person's age at last birthday. Fill in the matching circle below each box. b. Print each person's year of birth and fill the matching circle below each box.	a. Age b. Year of birth		a. Age b. Year of birth		a. Age b. Year of birth	
6. Marital status Fill ONE circle for each person	Now married	Separated	Now married	Separated	Now married	Separated
7. Is this person of Spanish/Hispanic origin? Fill ONE circle for each person	No (Not Spanish/Hispanic)	Yes (Mexican, Mexican-Am., Chicano)	No (Not Spanish/Hispanic)	Yes (Mexican, Mexican-Am., Chicano)	No (Not Spanish/Hispanic)	Yes (Mexican, Mexican-Am., Chicano)
If Yes, other Spanish/Hispanic, print one group.	Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic (Print one group, for example, Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.)		Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic (Print one group, for example, Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.)		Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic (Print one group, for example, Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.)	
FOR CENSUS USE						

PLEASE ALSO ANSWER HOUSING QUESTIONS ON PAGE 3

PERSON 4		PERSON 5		PERSON 6	
Last name	First name	Last name	First name	Last name	First name
If a RELATIVE of Person 1: Husband / wife Natural-born or adopted son / daughter Stepson / stepdaughter Brother / sister Father / mother Grandchild Other relative		If a RELATIVE of Person 1: Husband / wife Natural-born or adopted son / daughter Stepson / stepdaughter Brother / sister Father / mother Grandchild Other relative		If a RELATIVE of Person 1: Husband / wife Natural-born or adopted son / daughter Stepson / stepdaughter Brother / sister Father / mother Grandchild Other relative	
If NOT RELATED to Person 1: Roomer, boarder, or foster child Unmarried partner Housemate, roommate Other nonrelative		If NOT RELATED to Person 1: Roomer, boarder, or foster child Unmarried partner Housemate, roommate Other nonrelative		If NOT RELATED to Person 1: Roomer, boarder, or foster child Unmarried partner Housemate, roommate Other nonrelative	
Male	Female	Male	Female	Male	Female
White Black or Negro Indian (Amer.) (Print the name of the enrolled or principal tribe.) Eskimo Aleut Asian or Pacific Islander (API) Chinese Filipino Hawaiian Korean Vietnamese Japanese Asian Indian Samoan Guamanian Other API Other race (Print race)		White Black or Negro Indian (Amer.) (Print the name of the enrolled or principal tribe.) Eskimo Aleut Asian or Pacific Islander (API) Chinese Filipino Hawaiian Korean Vietnamese Japanese Asian Indian Samoan Guamanian Other API Other race (Print race)		White Black or Negro Indian (Amer.) (Print the name of the enrolled or principal tribe.) Eskimo Aleut Asian or Pacific Islander (API) Chinese Filipino Hawaiian Korean Vietnamese Japanese Asian Indian Samoan Guamanian Other API Other race (Print race)	
a. Age b. Year of birth		a. Age b. Year of birth		a. Age b. Year of birth	
0 0 0 1 8 0 0 1 1 1 9 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5 6 6 6 6 6 7 7 7 7 7 8 8 8 8 8 9 9 9 9 9		0 0 0 1 8 0 0 1 1 1 9 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5 6 6 6 6 6 7 7 7 7 7 8 8 8 8 8 9 9 9 9 9		0 0 0 1 8 0 0 1 1 1 9 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5 6 6 6 6 6 7 7 7 7 7 8 8 8 8 8 9 9 9 9 9	
Now married Widowed Divorced Separated Never married		Now married Widowed Divorced Separated Never married		Now married Widowed Divorced Separated Never married	
No (not Spanish/Hispanic) Yes, Mexican, Mexican-Am., Chicano Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic (Print one group, for example: Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.)		No (not Spanish/Hispanic) Yes, Mexican, Mexican-Am., Chicano Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic (Print one group, for example: Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.)		No (not Spanish/Hispanic) Yes, Mexican, Mexican-Am., Chicano Yes, Puerto Rican Yes, Cuban Yes, other Spanish/Hispanic (Print one group, for example: Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.)	

NOW PLEASE ANSWER QUESTIONS H1a-H7b FOR YOUR HOUSEHOLD

PERSON 1

Last name: _____ First name: _____ Middle name: _____

1. RELATIVE of Person 1

Spouse: ☐ Mother: ☐ Brother: ☐ Sister: ☐
 Father: ☐ Son: ☐ Daughter: ☐ Other relative: ☐
 Stepson: ☐ Stepdaughter: ☐

2. NOT RELATED to Person 1

Roomer: ☐ Boarder: ☐ Unwedded partner: ☐
 Housemate: ☐ Other: ☐ Other relative: ☐

Male: ☐ Female: ☐

White: ☐ Black or Negro: ☐
 Indian (Native): ☐ Other: ☐ Other: ☐

Latin: ☐ Asian or Pacific Islander (API): ☐
 Chinese: ☐ Japanese: ☐ Korean: ☐ Vietnamese: ☐
 Filipino: ☐ Asian Indian: ☐ Hawaiian: ☐ Other API: ☐

Other race (Print race): _____

3. Age **4. Year of birth**

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9

5. How many rooms do you have in this house or apartment?

Do NOT count bathrooms, porches, balconies, towers, halls, or full rooms.

1 room	2 rooms	3 rooms	4 rooms	5 rooms	6 rooms	7 rooms	8 rooms	9 or more rooms
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6. Is this house or apartment ...

Owned by you or someone in the household: ☐ Rented for cash rent: ☐ Occupied without payment of cash rent: ☐

7. What is the value of this property, that is, how much do you think this house and lot or condominium unit would sell for if it were for sale?

Less than \$10,000	\$10,000 to \$14,999	\$15,000 to \$19,999	\$20,000 to \$24,999	\$25,000 to \$29,999	\$30,000 to \$34,999	\$35,000 to \$39,999	\$40,000 to \$44,999	\$45,000 to \$49,999	\$50,000 to \$54,999	\$55,000 to \$59,999	\$60,000 to \$64,999	\$65,000 to \$69,999	\$70,000 to \$74,999	\$75,000 to \$79,999	\$80,000 to \$84,999	\$85,000 to \$89,999	\$90,000 to \$94,999	\$95,000 to \$99,999	\$100,000 or more
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8. What is the monthly rent?

Less than \$40	\$40 to \$49	\$50 to \$59	\$60 to \$69	\$70 to \$79	\$80 to \$89	\$90 to \$99	\$100 to \$109	\$110 to \$119	\$120 to \$129	\$130 to \$139	\$140 to \$149	\$150 to \$159	\$160 to \$169	\$170 to \$179	\$180 to \$189	\$190 to \$199	\$200 to \$209	\$210 to \$219	\$220 to \$229	\$230 to \$239	\$240 to \$249	\$250 to \$259	\$260 to \$269	\$270 to \$279	\$280 to \$289	\$290 to \$299	\$300 to \$309	\$310 to \$319	\$320 to \$329	\$330 to \$339	\$340 to \$349	\$350 to \$359	\$360 to \$369	\$370 to \$379	\$380 to \$389	\$390 to \$399	\$400 to \$409	\$410 to \$419	\$420 to \$429	\$430 to \$439	\$440 to \$449	\$450 to \$459	\$460 to \$469	\$470 to \$479	\$480 to \$489	\$490 to \$499	\$500 to \$509	\$510 to \$519	\$520 to \$529	\$530 to \$539	\$540 to \$549	\$550 to \$559	\$560 to \$569	\$570 to \$579	\$580 to \$589	\$590 to \$599	\$600 to \$609	\$610 to \$619	\$620 to \$629	\$630 to \$639	\$640 to \$649	\$650 to \$659	\$660 to \$669	\$670 to \$679	\$680 to \$689	\$690 to \$699	\$700 to \$709	\$710 to \$719	\$720 to \$729	\$730 to \$739	\$740 to \$749	\$750 to \$759	\$760 to \$769	\$770 to \$779	\$780 to \$789	\$790 to \$799	\$800 to \$809	\$810 to \$819	\$820 to \$829	\$830 to \$839	\$840 to \$849	\$850 to \$859	\$860 to \$869	\$870 to \$879	\$880 to \$889	\$890 to \$899	\$900 to \$909	\$910 to \$919	\$920 to \$929	\$930 to \$939	\$940 to \$949	\$950 to \$959	\$960 to \$969	\$970 to \$979	\$980 to \$989	\$990 to \$999	\$1,000 or more
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9. Does the monthly rent include any meals? Yes ☐ No ☐

FOR CENSUS USE

A. Total persons **B. Type of unit** **C. Monthly vacancy** **D. G. DO** **ID**

Occupied Vacant Less than 1 1 up to 2 3 up to 4 5 up to 6 7 up to 8 9 up to 10 11 up to 12 13 up to 14 15 up to 16 17 up to 18 19 up to 20 21 up to 22 23 up to 24 25 up to 26 27 up to 28 29 up to 30 31 up to 32 33 up to 34 35 up to 36 37 up to 38 39 up to 40 41 up to 42 43 up to 44 45 up to 46 47 up to 48 49 up to 50 51 up to 52 53 up to 54 55 up to 56 57 up to 58 59 up to 60 61 up to 62 63 up to 64 65 up to 66 67 up to 68 69 up to 70 71 up to 72 73 up to 74 75 up to 76 77 up to 78 79 up to 80 81 up to 82 83 up to 84 85 up to 86 87 up to 88 89 up to 90 91 up to 92 93 up to 94 95 up to 96 97 up to 98 99 up to 100 101 up to 102 103 up to 104 105 up to 106 107 up to 108 109 up to 110 111 up to 112 113 up to 114 115 up to 116 117 up to 118 119 up to 120 121 up to 122 123 up to 124 125 up to 126 127 up to 128 129 up to 130 131 up to 132 133 up to 134 135 up to 136 137 up to 138 139 up to 140 141 up to 142 143 up to 144 145 up to 146 147 up to 148 149 up to 150 151 up to 152 153 up to 154 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1511 up to 1512 1513 up to 1514 1515 up to 1516 1517 up to 1518 1519 up to 1520 1521 up to 1522 1523 up to 1524 1525 up to 1526 152

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Please make sure you have . . .

1. **FILLED** this form completely.
2. **ANSWERED** Question 1a on page 1.
3. **ANSWERED** Questions 2 through 7 for each person you listed in Question 1a.
4. **ANSWERED** Questions H1a through H7b on page 3.

Also . . .

5. **PRINT** here the name of a household member who filled the form, the date the form was completed, and the telephone number at which a person in this household can be called.

Name			Date
Telephone number	Area code	Number	☐ Day ☐ Night

Then . . .

6. **FOLD** the form the way it was sent to you.
7. **MAIL** it back by April 1, or as close to that date as possible, in the envelope provided; no stamp is needed. When you insert your completed questionnaire, please make sure that the address of the U.S. Census Office can be seen through the window on the front of the envelope.

NOTE — If you have listed more than 7 persons in Question 1a, please make sure that you have filled the form for the first 7 people. Then mail back this form. A census taker will call to obtain the information for the other people.

Thank you very much.

The Census Bureau estimates that, for the average household, this form will take 14 minutes to complete including the time for reviewing the instructions and answers. Comments about this estimate should be directed to the Assistant Director for Management Services, Bureau of the Census, Washington, DC 20233. Attn: CEN-90, and to the Office of Management and Budget, Paperwork Reduction Project CEN-90, Washington, DC 20503.